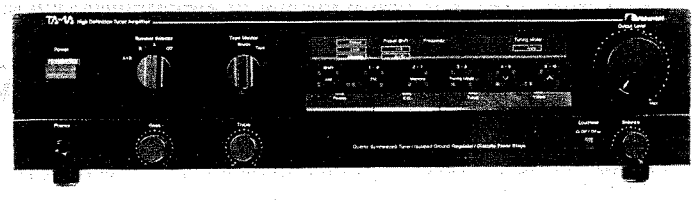
Nakamichi

Service Manual

Nakamichi

TA-1
TA-1A
TA-1E

High Definition Tuner Amplifier



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1. GENERAL

1.1. CAUTIONS/WARNINGS

(1) Product Safety Notice

Parts marked with the symbol ⚠ in the schematic diagram have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

(2) Leakage Current Check/Resistance Check

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — *DO NOT return the unit to the customer until the problem is located and corrected.*

1.2. Voltage Selector

Voltage selector is installed on the rear panel for Other version of the TA-1.
This voltage selector can select 110, 120, 220, or 240 V at customer's disposal.

1.3. Package Ass'y

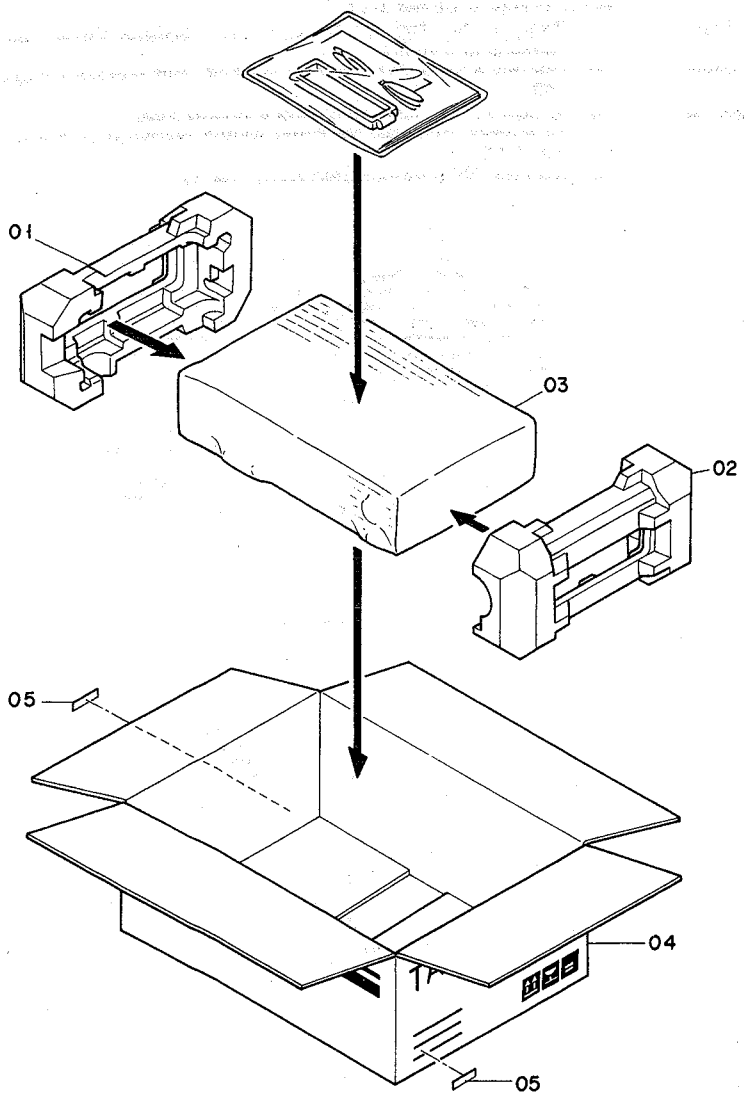


Fig. 1.1

1.4. Accessory Ass'y

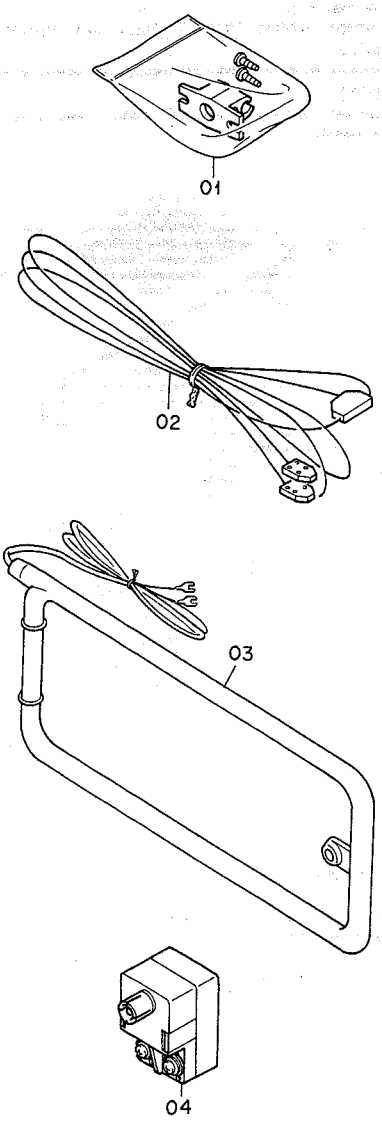


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Q'ty
		Package Ass'y	
01	0F04087E	Packing L (TA-1 & TA-1E)	1
	0F04178A	Packing L (TA-1A)	1
02	0F04088E	Packing R (TA-1 & TA-1E)	1
	0F04179A	Packing R (TA-1A)	1
03	0F04107A	Soft Sheet (TA-1 & TA-1E)	1
	0F04108A	Poly-Sheet (TA-1A)	1
04	0F04185A	Carton Box (TA-1)	1
	0F04170A	Carton Box (TA-1A)	1
	0F04186A	Carton Box (TA-1E)	1
05	0M05215A	Serial No. Label (TA-1 & TA-1E)	2
	0M05197A	Serial No. Label (TA-1A)	2
—	0M03457A	Voltage Label 240V (TA-1 (Australia))	2

Schematic Ref. No.	Part No.	Description	Q'ty
		Accessory Ass'y	
01	0B90319A	Loop Antenna Holder	1
	0E03496A	Screw 3.1x10 ⊕ (Black Chromate)	2
02	0B90320A	Feeder Antenna	1
03	0B90318A	AM Loop Antenna	1
04	0B90208A	Antenna Adapter F (TA-1E)	1
—	0D03092B	Poly Bag for Accessory (TA-1 & TA-1E)	1
—	0D04873A	Supplement (TA-1 (Other))	1
—	0D04811A	Poly Bag for Accessory (TA-1A)	1
—	0D04212A	Poly Bag for Accessory (TA-1 & TA-1E)	1
—	0D04766B	General Catalog (TA-1A)	1
—	0D04877A	Tape Catalog (TA-1A)	1
—	0D04836C	Warranty Card (TA-1A)	1
—	0D04810A	Important Notice	1
—	0D04871B	Owner's Manual (English/ German/French)	1

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y and Bottom Cover Ass'y
Refer to Fig. 2.1.
(1) Loosen screws F01 (5 pcs.) and remove F02 (Top Cover Ass'y).
(2) Loosen screws F03 (10 pcs.) and remove F04 (Bottom Cover Ass'y).
(3) Loosen screws F05 (2 pcs.) and remove legs (F06) as required.

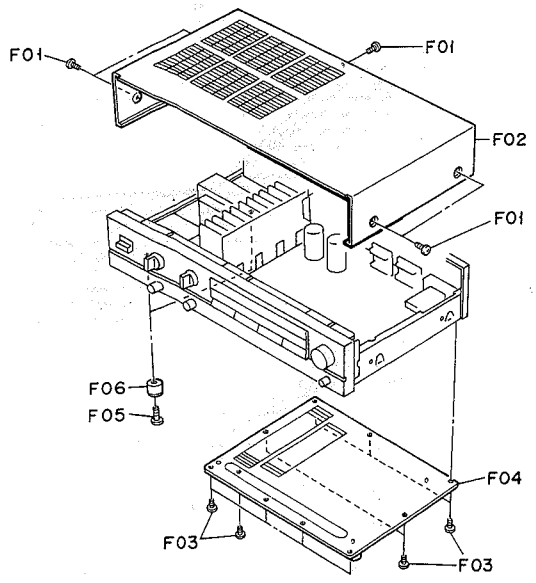


Fig. 2.1

2.2. Front Panel
Refer to Fig 2.2.
(1) Remove the Top Cover Ass'y and Bottom Cover Ass'y referring to item 2.1.
(2) Loosen screws F01 (3 pcs.) and F02 (2 pcs.), and remove F03 (Front Panel).

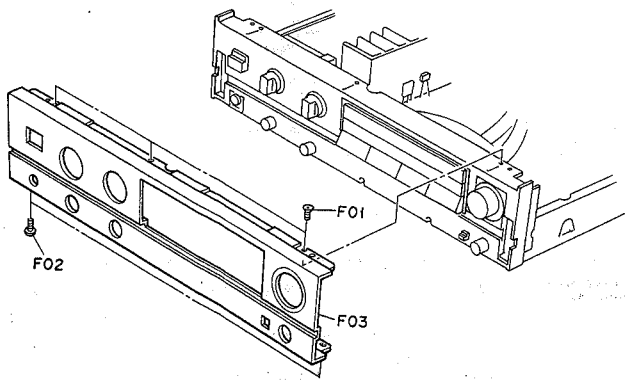


Fig. 2.2

2.3. Power Switch P.C.B. Ass'y
Refer to Figs. 2.3.1 and 2.3.2.
(1) Remove the Top Cover Ass'y and Bottom Cover Ass'y referring to item 2.1.
(2) Pull out a knob F01, loosen a nut F02, and remove a washer F03.
(3) Loosen a screw F04 and remove a button F05.
To remove F05, push the Power Switch rearward as shown in Fig. 2.3.2.
(4) Remove F06 (Power Switch P.C.B. Ass'y).

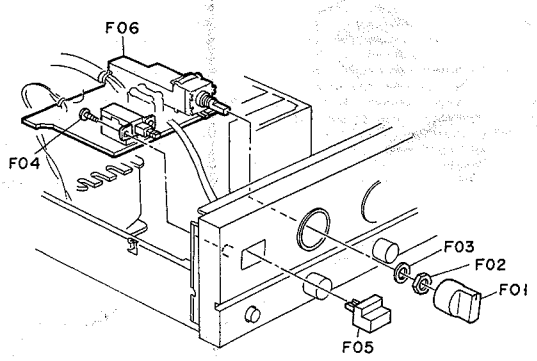


Fig. 2.3.1

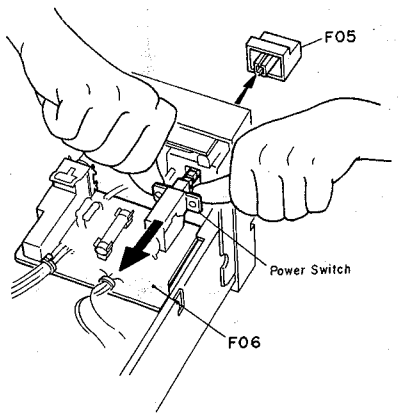


Fig. 2.3.2

2.4. Volume P.C.B. Ass'y and Balance & Loudness P.C.B. Ass'y

Refer to Figs. 2.4.1 and 2.4.2.

(1) Remove the Top Cover Ass'y and Bottom Cover Ass'y referring to item 2.1.
(2) Pull out a knob F01, loosen a nut F02, remove a washer F03, and disassemble F04 (Volume P.C.B. Ass'y).
(3) Pull out a knob F05, loosen a nut F06, and remove a washer F07.
(4) Unhook a claw F08 and remove F09 (Balance & Loudness P.C.B. Ass'y). Refer to Fig. 2.4.2.

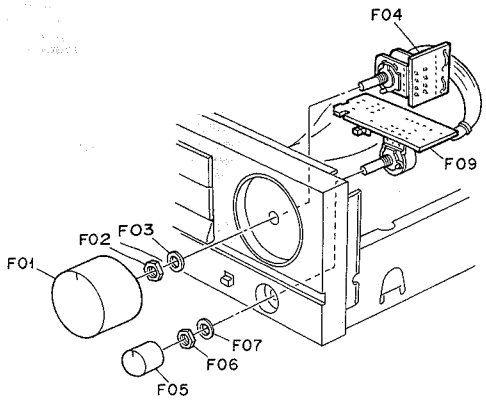


Fig. 2.4.1

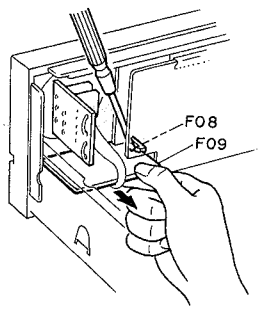


Fig. 2.4.2

2.5. Front Chassis Ass'y

Refer to Figs. 2.5.1 and 2.5.2.

(1) Remove the Front Panel referring to item 2.2.
(2) Remove the Power Switch P.C.B. Ass'y referring to item 2.3.
(3) Loosen screws F01 (7 pcs.).
(4) Lift F02 (Front Chassis Ass'y) and pull it frontward. Refer to Fig. 2.5.2.

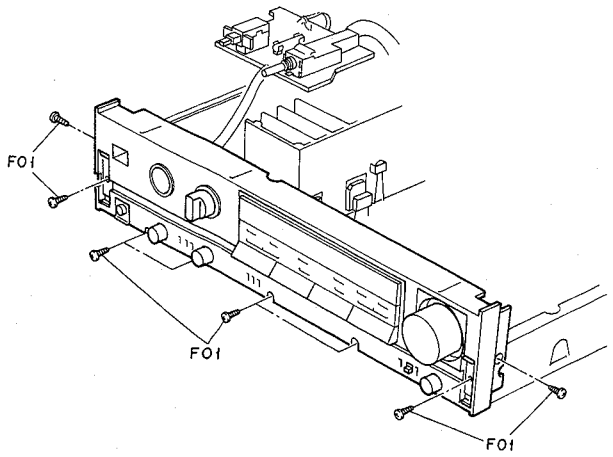


Fig. 2.5.1

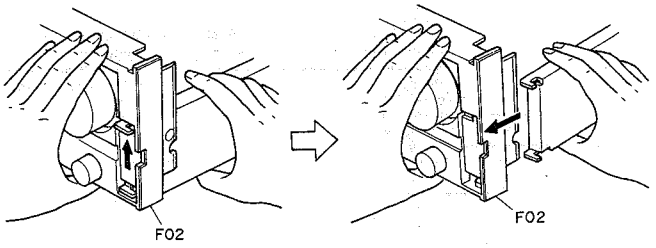


Fig. 2.5.2

2.6. Synthesizer P.C.B. Ass'y and Control Switch & Display P.C.B. Ass'y

Refer to Figs. 2.6.1 and 2.6.2.

(1) Remove the Front Chassis Ass'y referring to item 2.5.
(2) Loosen screws F01 (2 pcs.) and lift F02 (Synthesizer P.C.B. Ass'y). Cut insu-locks (cable ties) as required.
(3) Loosen screws F03 (2 pcs.) and remove F04 (Front P.C.B. Holder).
(4) Loosen screws F05 (5 pcs.) and remove F06 (Control Switch & Display P.C.B. Ass'y).

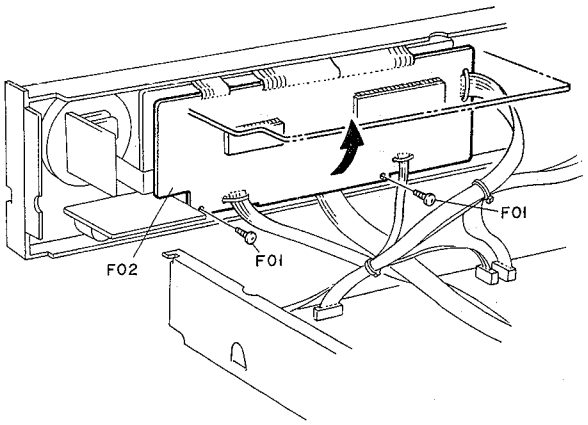


Fig. 2.6.1

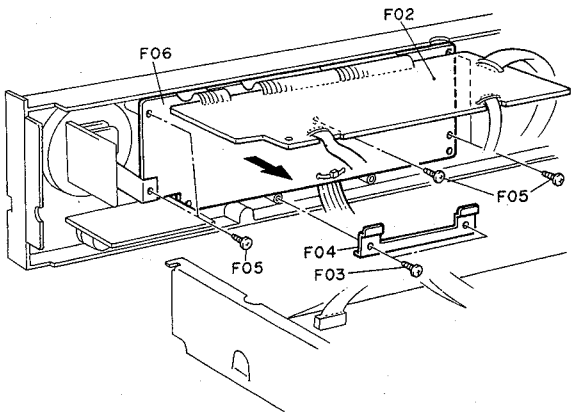


Fig. 2.6.2

3. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

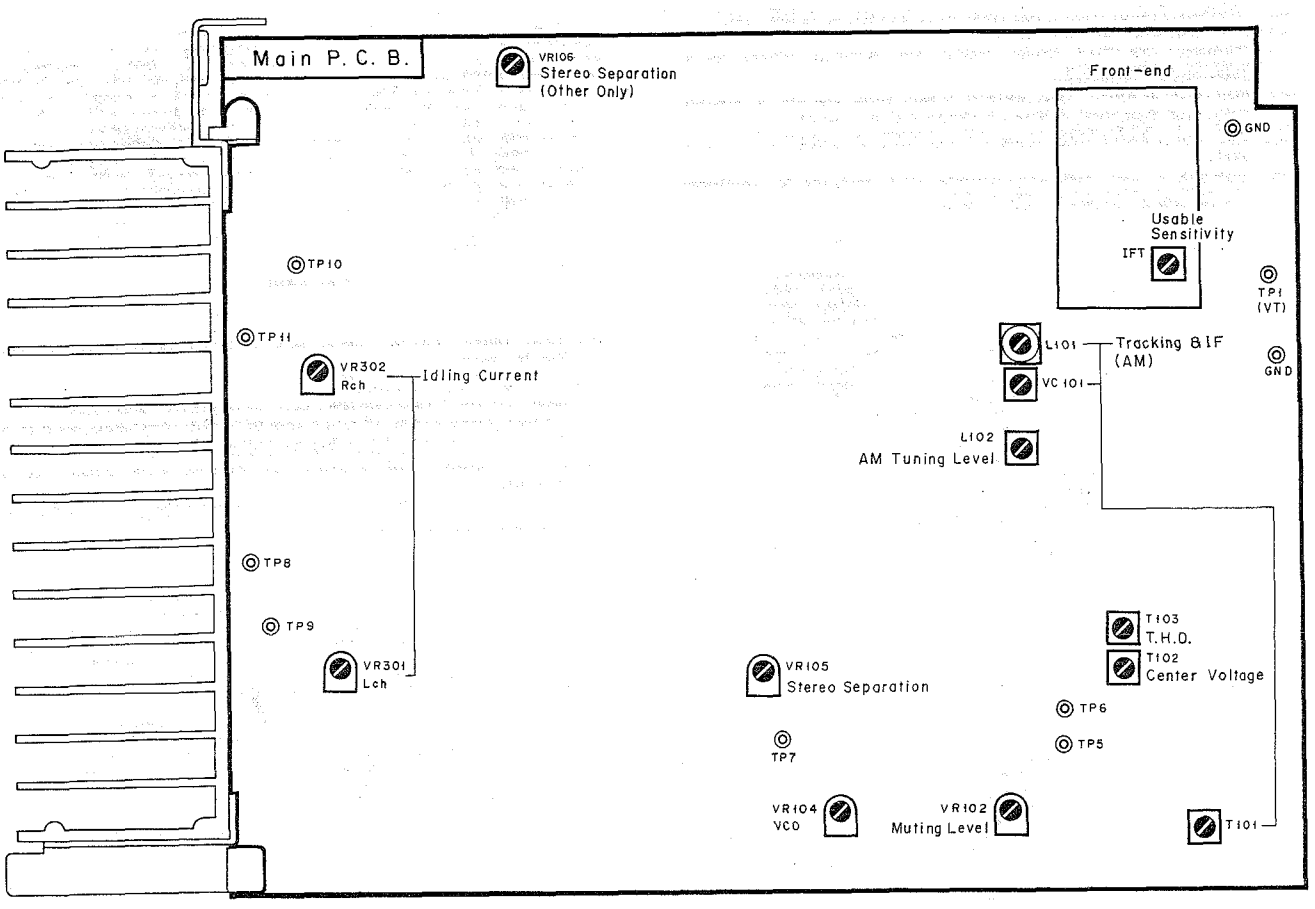


Fig. 3

4. ELECTRICAL ADJUSTMENTS

4.1. Power Amplifier Section

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
1	Idling Current	None	DC Volt-meter between TP8,9 (L) and TP10, 11 (R) on Main P.C.B.	Input Selector - CD Output Level - Min. Speaker Selec-tor - OFF	Main P.C.B. VR301 VR302	1. Insert shorting plugs into the CD Input Jacks. 2. Turn ON the power and allow 3 minutes before adjustment. (Top Cover must be installed before adjustment). 3. Adjust VR301 (VR302) to obtain 4 mV ±1 mV on the DC voltmeter.

4.2. Tuner Section

Note: Adjustment should be made in a shielded room in principle.

4.2.1. FM Tuner Section

STEP	ITEM	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
1	Preliminary Step	See Fig. 4.1	Tuner Amplifier Input Selector - Tuner Band Selector - FM Tape Monitor - Source Signal Generator Freq. - 98 MHz RF Level - 65 dBf Modulation - See REMARKS		1. Set the Tuner Amplifier as indicated in the MODE. 2. Adjustment and confirmation should be made after tuning in to the set carrier frequency of the Signal Generator. Note: Contents of modulation 1. For U.S.A., Canada & Other (Wide) o Stereo Audio: 1 kHz, 91% Pilot: 19 kHz, 9% o Mono Audio: 1 kHz, 100% 2. For Australia, Europe & Other (Narrow) o Stereo Audio: 1 kHz, 51% Pilot: 19 kHz, 9% o Mono Audio: 1 kHz, 60%
2	Usable Sensitivity Adjustment	Distortion Meter to Tape Record Output Jacks	Tuner Amplifier Same as above Signal Generator Freq. - 98 MHz RF Level - 13.5 dBf Modulation - Mono	Main P.C.B. Front-end IFT	1. Set the Tuner Amplifier to Manual mode by pressing the Tuning Mode button. 2. Adjust the IFT to obtain minimum distortion (total harmonic distortion (THD): 3% or less). 3. Set the frequency of the Signal Generator to 90 MHz/106 MHz and check that the THD is 3% or less.
3	Center Voltage and THD Adjustment	DC Voltmeter between TP5 & TP6 on Main P.C.B. and Distortion Meter to Tape Record Output Jacks	Tuner Amplifier Same as above Signal Generator Freq. - 98 MHz RF Level - 65 dBf Modulation - Mono	Main P.C.B. T102 T103	1. Set the Tuner Amplifier to Manual mode. 2. Adjust T102 so that the reading on the DC voltmeter is 0 V ±20 mV. 3. Adjust T103 to obtain minimum distortion (THD: 0.15% or less). Repeat 2 and 3, if necessary.
4	Muting Level Adjustment	Oscilloscope to Tape Record Output Jacks	Tuner Amplifier Same as above Signal Generator Freq. - 98 MHz RF Level - 30 dBf Modulation - Stereo	Main P.C.B. VR102	1. Set the Tuner Amplifier to Auto mode. 2. Rotate VR102 fully counterclockwise. Then, return it clockwise gradually until a waveform appears on the oscilloscope. 3. Decrease the RF level of the Signal Generator until the waveform on the oscilloscope disappears. Then increase the RF level gradually until a waveform appears again. At this point, check that the RF level of the Signal Generator is 30 dBf ±3 dB.

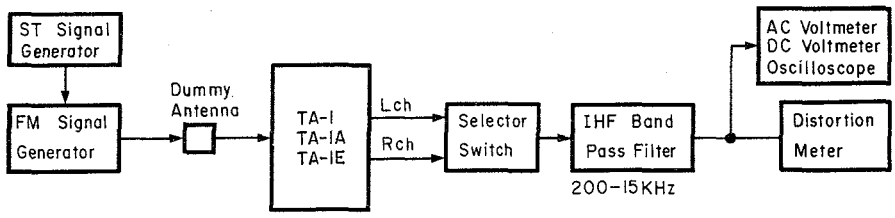
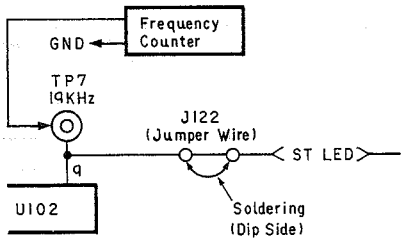


Fig. 4.1 FM Measuring Connection

STEP	ITEM	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
5	VCO Adjustment	Frequency Counter to TP7 and GND on Main P.C.B.	Tuner Amplifier Same as above Signal Generator Freq. - 98 MHz RF Level - 0 dBf Modulation - Stereo	Main P.C.B. VR104	1. Remve the Jumper Wire (J122). Note: See the dip side of the P.C.B. and make sure that both lands of J122 are not shortcircuited by soldering. If shortcircuited, remove the soldering.  2. Cut RF signal applid to the Tuner Amplifier. 3. Adjust VR104 to obtain 19 kHz ±50 Hz on the frequency counter. 4. After adjustment, mount the Jumper Wire (J122).
6	Stereo Separation Adjustment	AC Voltmeter to Tape Record Output Jacks	Tuner Amplifier Same as above Signal Generator Freq. - 98 MHz RF Level - 65 dBf Modulation - L or R only	Main P.C.B. VR105 VR106 (Other Only)	For U.S.A., Canada, Europe & Australia versions: 1. Set the Tuner Amplifier to Auto mode. 2. Apply modulation to only L channel. 3. Adjust VR105 to obtain minimum reading on the AC voltmeter at the R channel output jack. 4. Apply modulation to only R channel. 5. Check that the reading on the AC voltmeter at the L channel output jack is within ±1 dB with respect to the reading in 3. If not, repeat 2 through 4. For Other version: 1. Set the switches on the rear panel as follows: Freq. Step FM/AM - 100 kHz/10 kHz IF Band - Wide 2. Adjust VR105 by applying the same procedures as mentioned above. 3. Set the switches on the rear panel as follows: Freq. step FM/AM - 50 kHz/9 kHz IF Band - Narrow 4. Apply the same procedures as mentioned above. Adjust VR106 instead of VR105.

4.2.2. AM Tuner Section

Note: Frequencies for Australia, Europe & Other (Narrow) are indicated in parentheses.

STEP	ITEM	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
1	Tuning Level Adjustment	DC Voltmeter between TP1 (VT) and GND on Main P.C.B.	Tuner Amplifier Input Selector -Tuner Band Selector - AM Tape Monitor - Source Signal Generator Not used.	Main P.C.B. L102	1. With no input signal from the Signal Generator, set the frequency of the TA-1/1A/1E to 520 (522) kHz. 2. Adjust L102 to obtain 1.0 V on the DC voltmeter. 3. Set the frequency of the TA-1/1A/1E to 1710 (1611) kHz and check whether the reading on the DC voltmeter is approx. 8.7 V. 4. Vary the frequency of the TA-1/1A/1E from 520 (522) kHz to 1710 (1611) kHz and check whether the reading on the DC voltmeter varies from 1.0 V to approx. 8.7 V.
2	Tracking and IF Adjustment	AC Voltmeter to Tape Record Output Jacks	Tuner Amplifier Same as above Signal Generator Freq. - 600 (603) kHz/ 1400 (1404) kHz RF Level - 98 dBμ/m Modulation - 400 Hz 30%	Main P.C.B. L101 T101 VC101	1. Set the measurement instruments as shown in Fig. 4.2. Set the distance between the AM Loop Antenna of the TA-1/1A/1E and a test loop to 60 cm. To obtain 90 dBμ/m at the AM Loop Antenna, set the RF level output of the AM Signal Generator to 116 dBμ/m as loss is 26 dBμ/m in this setting. 2. Set the frequency of the Signal Generator to 600 (603) kHz and make tuning. 3. Adjust L101 to obtain maximum reading on the AC voltmeter. 4. Adjust T101 to obtain maximum reading on the AC voltmeter. 5. Set the frequency to 1400 (1404) kHz and make tuning. 6. Adjust VC101 to obtain maximum reading on the AC voltmeter. 7. Repeat 2 through 6 once.

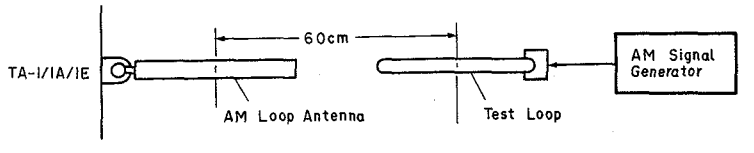


Fig. 4.2

5. MECHANISM ASS'Y AND PARTS LIST

5.1. Synthesis

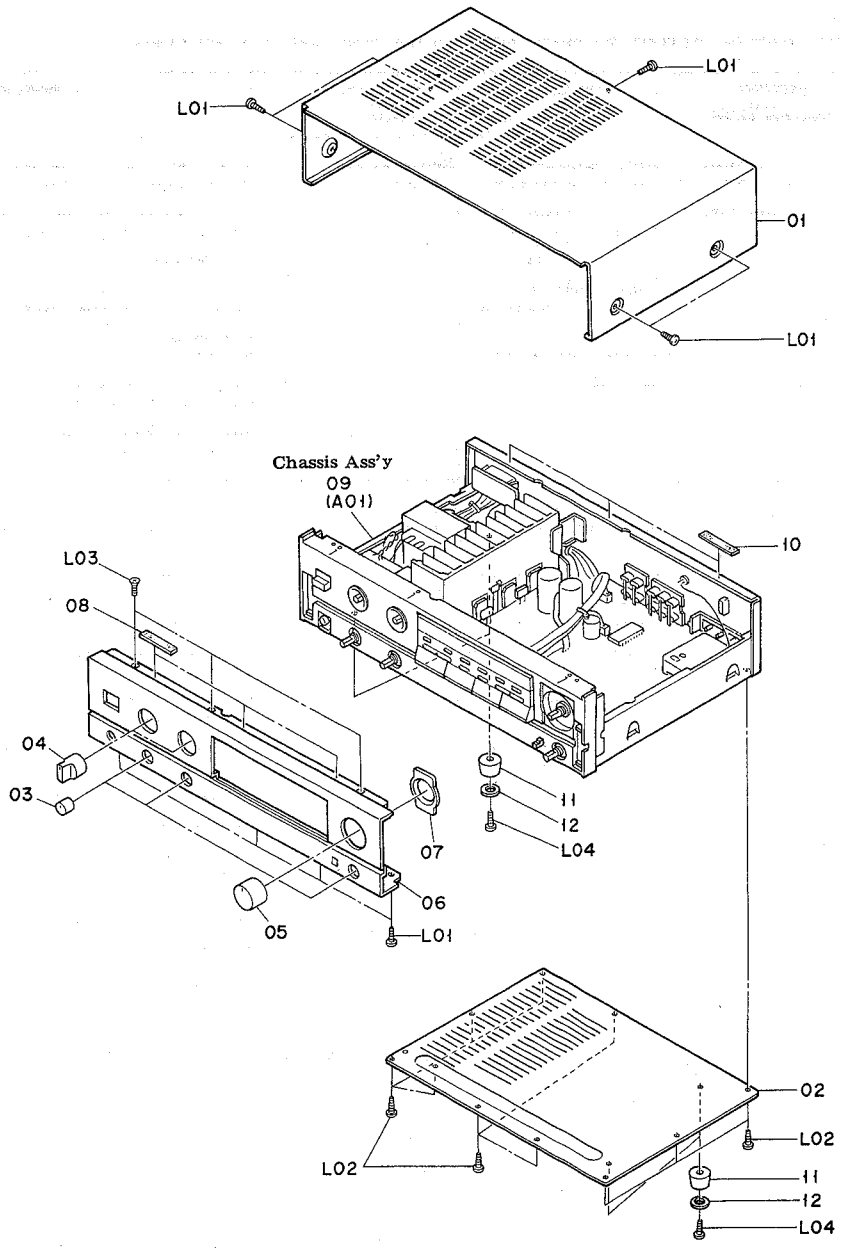
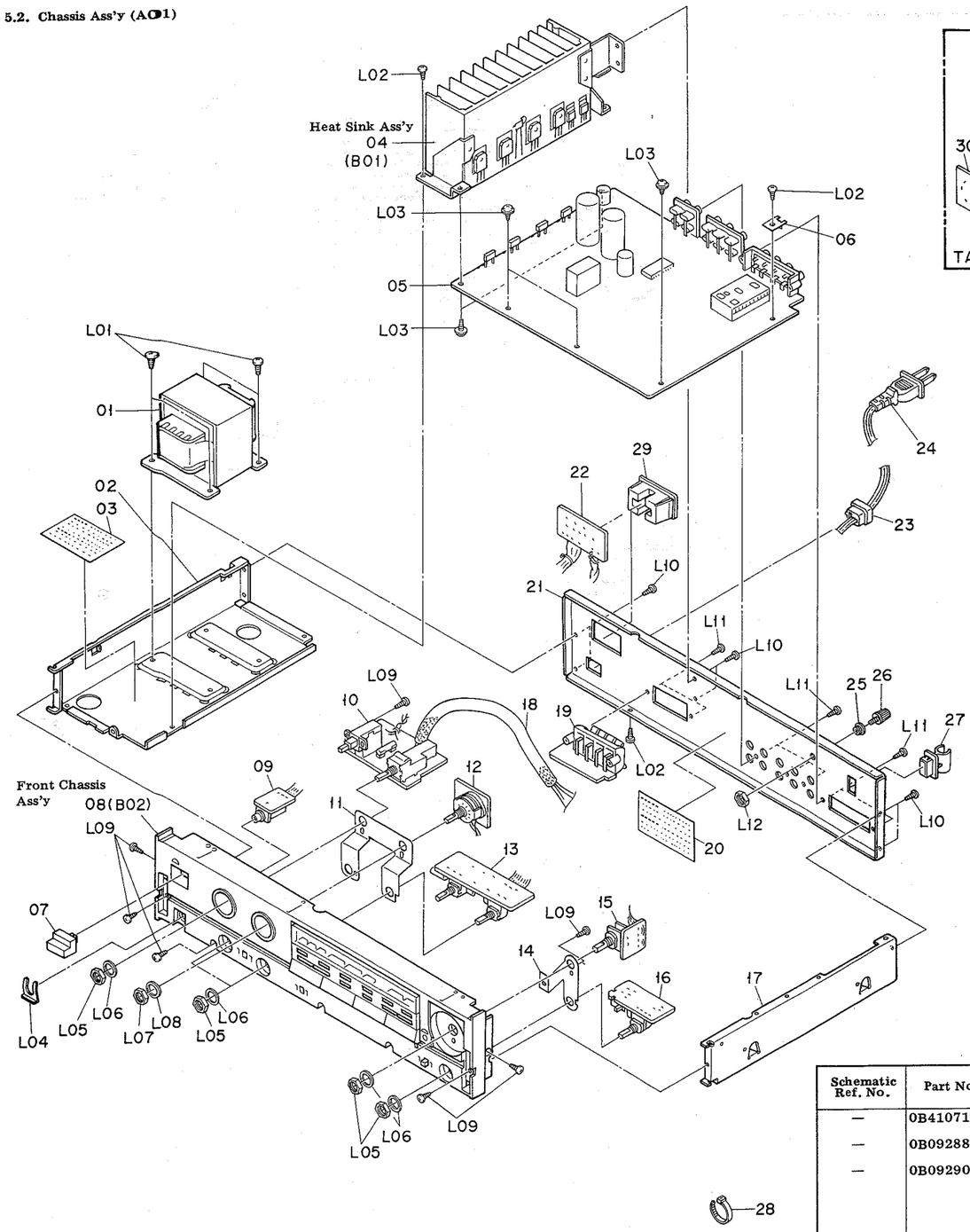


Fig. 5.1

Schematic Ref. No.	Part No.	Description	Q'ty
5.1. Synthesis			
		Synthesis	
01	0H05315A	Top Cover	1
02	0J05606A	Bottom Cover	1
03	0H05318A	Tone Knob	3
04	0H05321A	Selector Knob	2
05	HA05444A	Volume Knob Ass'y	1
06	0H05378A	Front Panel (TA-1)	1
	0H05312A	Front Panel (TA-1A)	1
	0H05377A	Front Panel (TA-1E)	1
07	0H05313A	Escutcheon Ring	1
08	0J05453A	Top Cover Cushion	3
09	—	Chassis Ass'y	1
10	0J05407A	Top Cover Sheet R	3
11	0J05420A	Leg N	4
12	0J05461A	Leg Felt N	4

Schematic Ref. No.	Part No.	Description	Q'ty
L01	0E03433A	BT3x6 ⊕Binding Projected (Black Chromate)	9
L02	0E00857A	BT3x6 ⊕Binding	10
L03	0E03054A	BT3x8 ⊕Countersunk	3
L04	0E00888A	BT3x12 ⊕Binding	4
—	0M04377B	Caution Label (TA-1A)	1
—	0M04381A	EP Approval Label (TA-1E)	1
—	0M05068A	LA Label (TA-1A)	1
—	0M05148A	Production Date Label (TA-1A)	1
—	0M05172A	Pass Label (TA-1A)	1
—	0M05197A	Serial No. Label (TA-1A)	1
—	0M05215A	Serial No. Label (TA-1 & TA-1E)	1
—	0M05219A	DBP Approval Label (TA-1E)	1
—	0M04811A	Voltage Caution Sheet (TA-1 (Other))	1
—	0M04812A	Voltage Caution Label (TA-1 (Other))	1

5.2. Chassis Ass'y (A01)



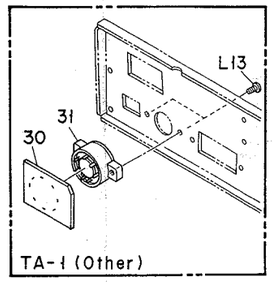


Fig. 5.2

Schematic Ref. No.	Part No.	Description	Q'ty
—	0B41071A	Ceramic Capacitor 100P 50V J (TA-1E)	2
—	0B09288A	Ceramic Capacitor 1000P 50V K (TA-1E)	3
—	0B09290A	Ceramic Capacitor 0.01μF 50V Z (TA-1E)	3

Schematic Ref. No.	Part No.	Description	Q'ty
5.2. Chassis Ass'y (A01)			
A01	—	Chassis Ass'y	1
01	0B50120A	Power Transformer (TA-1 (Australia) & TA-1E)	1
	0B50122A	Power Transformer (TA-1 (Other))	1
	0B50113A	Power Transformer (TA-1A (U.S.A.))	1
	0B50125A	Power Transformer (TA-1A (Canada))	1
02	0J05604A	Side Chassis L	1
03	0M05196A	Fuse Label T3A 250V (TA-1A)	1
04	BA07309A	Heat Sink Ass'y	1
05	BA07312A	Main P.C.B. Ass'y (TA-1 (Australia))	1
	BA07310A	Main P.C.B. Ass'y (TA-1 (Other))	1
	BA07269A	Main P.C.B. Ass'y (TA-1A)	1
	BA07311A	Main P.C.B. Ass'y (TA-1E)	1
06	0J05670A	Earth Plate	1
07	0H05325A	Power Button	1
08	HA05445A	Front Chassis Ass'y (TA-1 & TA-1A)	1
	HA05473A	Front Chassis Ass'y (TA-1E)	1
09	BA07273A	Headphone P.C.B. Ass'y	1
10	BA07314A	Power Switch P.C.B. Ass'y (TA-1 (Australia) & TA-1E)	1
	BA07275A	Power Switch P.C.B. Ass'y (TA-1 (Other) & TA-1A)	1
11	0J05612A	Volume Ground Plate A	1
12	BA07274A	Monitor Switch P.C.B. Ass'y	1
13	BA07272A	Tone Control P.C.B. Ass'y	1
14	0J05613A	Volume Ground Plate B	1
15	BA07270A	Volume P.C.B. Ass'y	1
16	BA07271A	Balance & Loudness P.C.B. Ass'y	1
17	0J05393A	Side Chassis R	1
18	0B80203A	Glass Tube 8S 200mm	1
19	BA07277A	Speaker Terminal P.C.B. Ass'y (TA-1 & TA-1A)	1
	BA07342A	Speaker Terminal P.C.B. Ass'y (TA-1E)	1
20	0M05195A	Fuse Label T1A 125V (TA-1A)	1
21	0H05381A	Rear Panel (TA-1 (Australia))	1
	0H05380A	Rear Panel (TA-1 (Other))	1
	0H05314A	Rear Panel (TA-1A)	1
	0H05379A	Rear Panel (TA-1E)	1
22	BA07276A	AC Outlet P.C.B. Ass'y (TA-1 (Other) & TA-1A)	1
23	0B90280A	Cord Bushing	1
24	0B80148A	Power Cord (TA-1 (Australia))	1
	0B80199A	Power Cord SPT-2 (TA-1 (Other) & TA-1A)	1
	0B08093U	Power Cord (TA-1E)	1
25	0J05611A	Ground Terminal	1
26	0J05669A	Ground Knob	1
27	0B90316A	AM Antenna Holder	1
28	0B08515A	Insu-Lock	10
29	0B81928A	AC Outlet (TA-1 (Other) & TA-1A)	1
30	0B60591A	Voltage Selector P.C.B. (TA-1 (Other))	1
31	0B70138A	Voltage Selector (TA-1 (Other))	1
L01	0E03434A	BT4x6 ⊕ Binding	4
L02	0E00857A	BT3x6 ⊕ Binding	3
L03	0E03432A	BT3x6 ⊕ Tapping (Black Chromate)	5
L04	0J05427A	Mounting Plate	1
L05	0E03382A	Nut Hex. M7	5
L06	0E03383A	Washer 7mm	5
L07	0E03375A	Nut Hex. M9	1
L08	0E03376A	Washer 9mm	1
L09	0E00868A	BT3x8 ⊕ Binding	5
L10	0E03433A	BT3x6 ⊕ Binding Projected (Black Chromate)	6
L11	0E00921A	BT3x8 ⊕ Binding (Black Chromate)	7
L12	0J05673A	Nut 70 ZN3A	1
L13	0E00985A	M3x6 ⊕ Binding (Black Chromate) (TA-1 (Other))	2
—	0J05665A	Free-up Belt (TA-1 & TA-1E)	1
—	0J05703A	Earth Lug (TA-1A)	1
—	0M04191A	Fuse Label (TA-1 (Australia) & TA-1E)	1
—	0M05220A	Fuse Label (TA-1 (Australia) & TA-1E)	1
—	0B83476A	Lead Wire 100mm (TA-1 (Other))	1
—	0E00037A	Earth Lug B-5 (TA-1E)	2
—	0E03069A	Earth Lug B-2 (TA-1E)	2
—	0E00862A	BT3x6 ⊕ Pan (TA-1E)	2

5.3. Heat Sink Ass'y (B01)

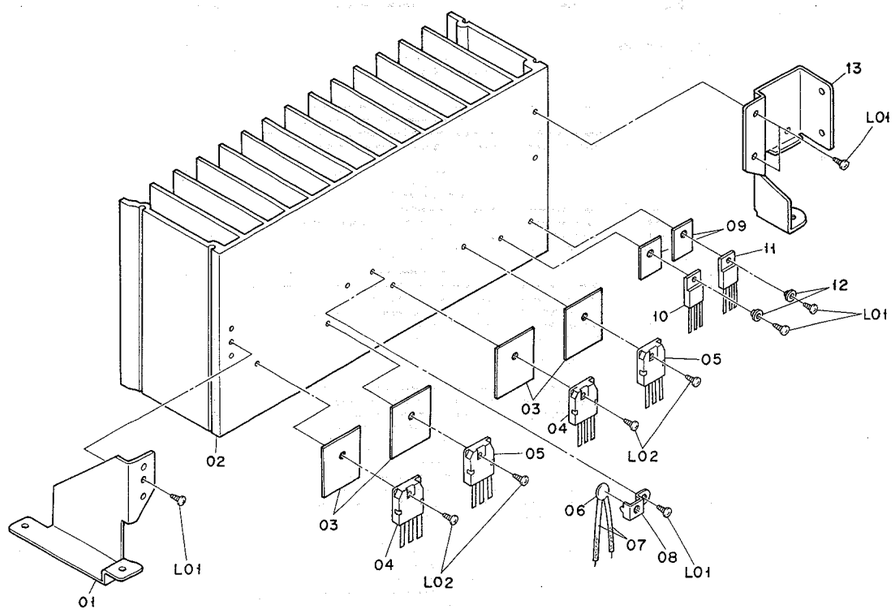


Fig. 5.3

Schematic Ref. No.	Part No.	Description	Q'ty
5.3. Heat Sink Ass'y			
B01	**BA07309A**	**Heat Sink Ass'y**	**1**
01	0J05609A	Heat Sink Holder F	1
02	0J05608A	Heat Sink	1
03	0J05671A	Insulator TO-3P	4
04	0B10244A	TR 2SA1264N (O,R) [Q312L,R]	2
05	0B10245A	TR 2SC3181N (O,R) [Q311L,R]	2
06	0B19607A	Thermistor 50KD-5 [TH301]	1
07	0B80202A	Glass Tube 30	2
08	0J05615A	Thermistor Holder	1
09	0J05672A	Insulator TO-220	2
10	0B10248A	TR 2SD313 (E) [Q405]	1
11	0B11508A	IC MC7806CT [U401]	1
12	0B08594A	Transistor Bush	2
13	0J05610A	Heat Sink Holder R	1
L01	0E00868A	BT3x8 ⊕ Binding	6
L02	0E00865A	BT3x10 ⊕ Binding	4

5.4. Front Chassis Ass'y (B02)

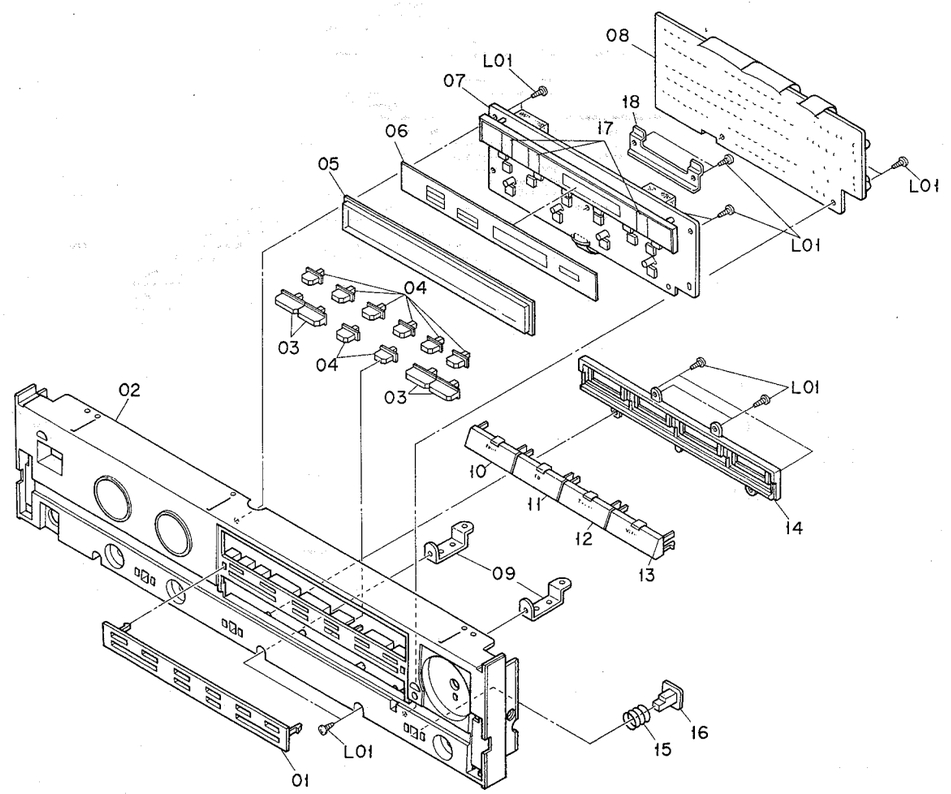


Fig. 5.4

Schematic Ref. No.	Part No.	Description	Q'ty
5.4. Front Chassis Ass'y			
B02	**HA05445A**	**Front Chassis Ass'y (TA-1 & TA-1A)**	**1**
	HA05473A	**Front Chassis Ass'y (TA-1E)**	**1**
01	0H05316A	Memory Plate	1
02	0H05328A	Front Chassis	1
03	0H05324A	Up/Down Button	4
04	0H05323A	Preset Button	8
05	0H05326A	Display Lens	1
06	0H05327A	Display Overlay	1
07	BA07279A	Control Switch & Display P.C.B. Ass'y (TA-1 & TA-1A)	1
	BA07313A	Control Switch & Display P.C.B. Ass'y (TA-1E)	1
08	BA07278A	Synthesizer P.C.B. Ass'y (TA-1 & TA-1A)	1
	BA07366A	Synthesizer P.C.B. Ass'y (TA-1E)	1
09	0J05607A	P.C.B. Holder	2
10	HA05443A	Phono Button Ass'y	1
11	HA05467A	CD Button Ass'y	1
12	HA05468A	Tuner Button Ass'y	1
13	HA05469A	Video Button Ass'y	1
14	0J05605A	Button Base	1
15	0J05406A	Push Spring	1
16	0H05322A	Push Button	1
17	0J05614A	Diffuser	3
18	0J05749A	Front P.C.B. Holder	1
L01	0E00868A	BT3x8 ⊕ Binding	15

6. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
3. Following transistors are interchangeable with each other.
   a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
   b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
4. Abbreviation for part name:
   TR — Transistor, SiD — Silicon Diode, ZD — Zener Diode, Varicap — Variable Capacitance Diode
   RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor
   CE — Electrolytic Capacitor, CML — Mylar Capacitor, CC — Ceramic Capacitor, CPP — PP Capacitor,
   CMM — Metalized Mylar Capacitor, CSP — Polystyrene Capacitor, C — Mica Capacitor

6.1. AC Outlet P.C.B. Ass'y

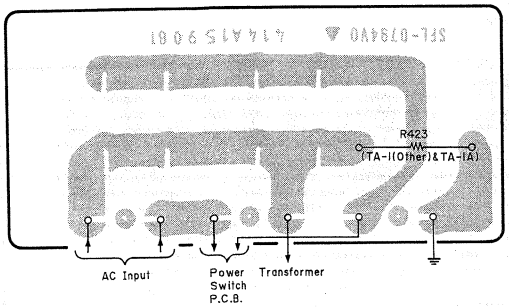


Fig. 6.1

6.2. Power Switch P.C.B. Ass'y

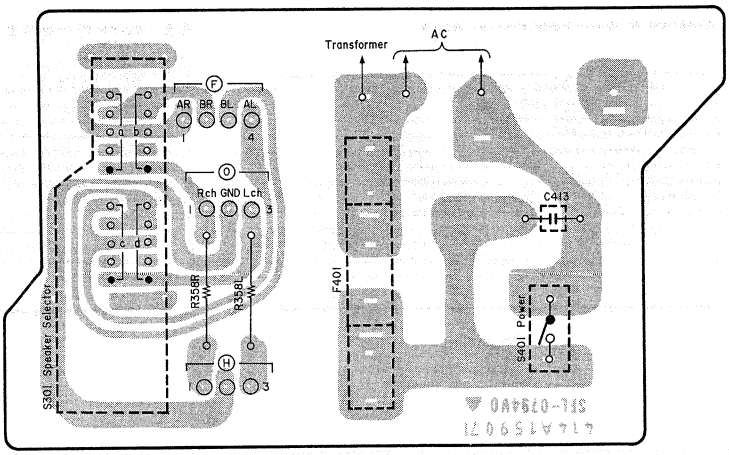


Fig. 6.2

6.3. Speaker Terminal P.C.B. Ass'y

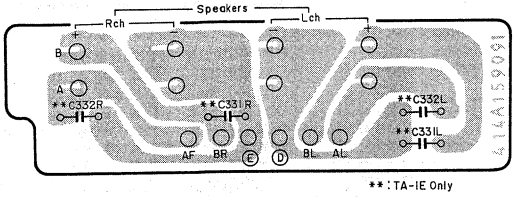


Fig. 6.3

Schematic Ref. No.	Part No.	Description
6.1. AC Outlet P.C.B. Ass'y		
	BA07276A	AC Outlet P.C.B. Ass'y (TA-1 (Other) & TA-1A)
	0B60585A	AC Outlet P.C.B.
R423	0B05919A	RK 3.3M 1/2W J
A-A	0B83366A	Lead Wire RED 300mm
B-B	0B83367A	Lead Wire BRN 300mm
	0B83363A	Lead Wire BLK 140mm (1)
6.2. Power Switch P.C.B. Ass'y		
	BA07275A	Power Switch P.C.B. Ass'y (TA-1 & TA-1A)
	BA07314A	Power Switch P.C.B. Ass'y (TA-1E)
	0B60584A	Power Switch P.C.B.
R358L,R	0B24184A	RF 330 1W J
C413	0B41829A	Spark Killer 4700P 400V
S301	0B70129A	Rotary Switch 4P4C
S401	0B71010A	Power Switch SDDLB
F401	0B90330A	Fuse T3A 250V (TA-1 (Other) & TA-1A)
F401	0B90344A	Fuse 1R60CT S (TA-1 (Australia) & TA-1E)
	0B81930A	Fuse Holder SN-5051 (TA-1 & TA-1A) (2)
	0B81848A	Fuse Holder (TA-1E) (2)
	0B80204A	Terminal Pin (1)
	0M05220A	Fuse Label T1.6A 250V (TA-1E) (1)
6.3. Speaker Terminal P.C.B. Ass'y		
	BA07277A	Speaker Terminal P.C.B. Ass'y (TA-1 & TA-1A)
	BA07342A	Speaker Terminal P.C.B. Ass'y (TA-1E)
	0B60586A	Speaker Terminal P.C.B.
C331L,R	0B05582A	CML 0.022μ 50V J (TA-1E)
C332L,R	0B05582A	CML 0.022μ 50V J (TA-1E)
F-F	0B83360A	4P Ribbon Cable 240mm
	0B81929A	8P Speaker Terminal (1)

6.4. Headphone P.C.B. Ass'y

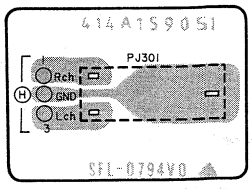


Fig. 6.4

6.5. Monitor Switch P.C.B. Ass'y

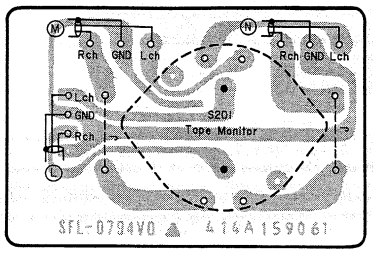


Fig. 6.5

6.6. Volume P.C.B. Ass'y

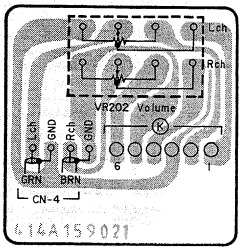


Fig. 6.6

6.7. Balance & Loudness P.C.B. Ass'y

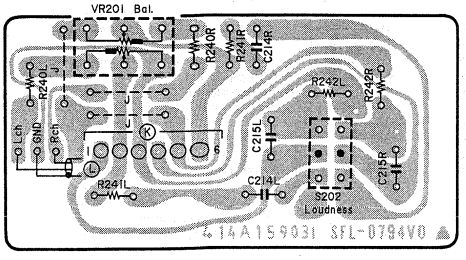


Fig. 6.7

6.8. Tone Control P.C.B. Ass'y

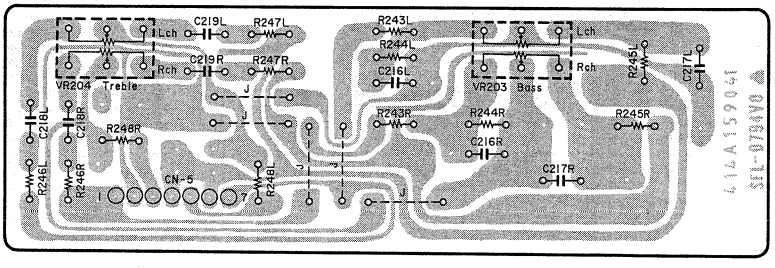


Fig. 6.8

Schematic Ref. No.	Part No.	Description
6.4. Headphone P.C.B. Ass'y		
	BA07273A	**Headphone P C.B. Ass'y**
	0B60582A	Headphone P.C.B.
H-H	0B83348A	3P Flat Cable BLK 140mm
PJ301	0B81757A	Headphone Jack LJ0660-2
	0B80215A	UL Tube 80mm (1)
6.5. Monitor Switch P.C.B. Ass'y		
	BA07274A	**Monitor Switch P.C.B. Ass'y**
	0B60583A	Monitor Switch P.C.B.
S201	0B70128A	Rotary Switch MSB22BP
L-L	0B83350A	Lead Wire RED 350mm
M-M	0B83369A	Lead Wire BRN 400mm
N-N	0B83368A	Lead Wire GRY 400mm

Schematic Ref. No.	Part No.	Description
6.6. Volume P.C.B. Ass'y		
	BA07270A	**Volume P.C.B. Ass'y**
	0B60579A	Volume P.C.B.
VR202	0B30087A	VR 50K(B)x2
CN4	0B83349A	4P Connector Ass'y 240mm
K-K	0B83352A	6P Flat Cable BLK 100mm
	0B08515A	Insu-Lock (1)
6.7. Balance & Loudness P.C.B. Ass'y		
	BA07271A	**Balance & Loudness P.C.B. Ass'y**
	0B60580A	Balance & Loudness P.C.B.
VR201	0B30088A	VR 250K (MN)x2
R240L,R	0B09685A	RK 2.2K 1/6W J
R241L,R	0B09687A	RK 2.7K 1/6W J
R242L,R	0B09695A	RK 5.6K 1/6W J
C214L,R	0B05653A	CML 1500P 50V J
C215L,R	0B01780A	CML 0.1μ 50V J
S202	0B70127A	Push Switch PSR-221

Schematic Ref. No.	Part No.	Description
6.8. Tone Control P.C.B. Ass'y		
	BA07272A	**Tone Control P.C.B. Ass'y**
	0B60581A	Tone Control P.C.B.
VR203	0B30089A	VR 250K (C)x2
VR204	0B30090A	VR 100K (C)x2
R243L,R	0B09700A	RK 9.1K 1/6W J
R244L,R	0B09714A	RK 36K 1/6W J
R245L,R	0B09683A	RK 1.8K 1/6W J
R246L,R	0B09683A	RK 1.8K 1/6W J
R247L,R	0B09668A	RK 430 1/6W J
R248L,R	0B09699A	RK 8.2K 1/6W J
C216L,R	0B41299A	CML 0.12μ 50V J
C217L,R	0B41306A	CML 0.47μ 50V J
C218L,R	0B05659A	CML 5600P 50V J
C219L,R	0B05660A	CML 0.039μ 50V J
CN5	0B83353A	7P Flat Cable BLK 180mm

Schematic Ref. No.	Part No.	Description
6.9. Control Switch & Display P.C.B. Ass'y		
	BA07279A	**Control Switch & Display P.C.B. Ass'y (TA-1 & TA-1A)**
	BA07313A	**Control Switch & Display P.C.B. Ass'y (TA-1E)**
	0B60588A	Control Switch & Display P.C.B.
Q601,602	0B01872A	TR 2SC945L (P,Q) (TA-1E)
Q603,604	0B01872A	TR 2SC945L (P,Q) (TA-1E)
Q605,606	0B01872A	TR 2SC945L (P,Q)
Q607,608	0B01872A	TR 2SC945L (P,Q)
Q609	0B01872A	TR 2SC945L (P,Q)
Q610	0B06013A	TR 2SA733 (P,Q)
D601,602	0B12584A	SiD 1N4148 (TA-1E)
D603,604	0B12584A	SiD 1N4148
D605,606	0B12584A	SiD 1N4148
D607,608	0B12584A	SiD 1N4148
D609,610	0B12584A	SiD 1N4148
D611,612	0B12584A	SiD 1N4148
D613,614	0B12584A	SiD 1N4148
D615,616	0B12584A	SiD 1N4148
ED617,618	0B12395A	LED SLR-34PC3F
ED619,620	0B12395A	LED SLR-34PC3F
ED621,622	0B12395A	LED SLR-34PC3F
ED623,624	0B12395A	LED SLR-34PC3F
ED625,626	0B12395A	LED SLR-34PC3F
DP601	0B12608A	Display Unit LTF-2401 KLR (TA-1 & TA-1A)
	0B12616A	Display Unit LTF-2501 (TA-1E)
R601,602	0B09701A	RK 10K 1/6W J (TA-1E)
R603	0B09662A	RK 240 1/6W J
R604	0B09661A	RK 220 1/6W J (TA-1E)
R605,606	0B09693A	RK 4.7K 1/6W J (TA-1E)
R607	0B09701A	RK 10K 1/6W J (TA-1E)
R608,609	0B09655A	RK 120 1/6W J (TA-1E)
R610	0B09655A	RK 120 1/6W J (TA-1E)
R611,612	0B09659A	RK 180 1/6W J
R613	0B09661A	RK 220 1/6W J
R614,615	0B09709A	RK 22K 1/6W J
R616,617	0B09709A	RK 22K 1/6W J
R618,619	0B09693A	RK 4.7K 1/6W J
R620,621	0B09693A	RK 4.7K 1/6W J
R622,623	0B09701A	RK 10K 1/6W J
R624	0B09701A	RK 10K 1/6W J
R625	0B09683A	RK 1.8K 1/6W J
R626	0B05578A	RK 180 1/4W J
R627	0B09657A	RK 150 1/6W J
R628,629	0B09659A	RK 180 1/6W J
R630	0B09657A	RK 150 1/6W J
R631,632	0B09701A	RK 10K 1/6W J
S601,602	0B70130A	Tact Switch R66-3818
S603,604	0B70130A	Tact Switch R66-3818
S605,606	0B70130A	Tact Switch R66-3818
S607,608	0B70130A	Tact Switch R66-3818
S609,610	0B70130A	Tact Switch R66-3818
S611,612	0B70130A	Tact Switch R66-3818
S613,614	0B70130A	Tact Switch R66-3818
S615,616	0B70130A	Tact Switch R66-3818
CN6	0B83351A	5P Flat Cable BLK 240mm
	0B08515A	Insu-Lock (1)
	0E00868A	BT3x8 ⊕ Binding (2)
	0J05416A	LED Reflector A132 (4)
	0J05603A	Display Reflector (1)

Schematic Ref. No.	Part No.	Description
6.10. Synthesizer P.C.B. Ass'y		
	BA07278A	**Synthesizer P.C.B. Ass'y (TA-1 & (TA-1A)**
	BA07366A	**Synthesizer P.C.B. Ass'y (TA-1E)**
	0B60587A	Synthesizer P.C.B.
U501	0B11160A	IC TD6301AP
U502	0B11159A	IC TD6104P
U503	0B11161A	IC TC9147BP
U504	0B06219A	IC μPD4081BC
Q501	0B01872A	TR 2SC945L (P,Q)
Q502,503	0B10097A	TR 2SA952L (K,L)
Q504,505	0B01872A	TR 2SC945L (P,Q)
Q506	0B06013A	TR 2SA733 (P,Q)
Q507,508	0B01872A	TR 2SC945L (P,Q)
Q509,510	0B01872A	TR 2SC945L (P,Q)
Q511	0B01872A	TR 2SC945L (P,Q)
D501	0B12584A	SiD 1N4148
D502	0B12584A	SiD 1N4148
D503,504	0B12584A	SiD 1N4148
D505,506	0B12584A	SiD 1N4148
D507,508	0B12584A	SiD 1N4148
D509	0B12584A	SiD 1N4148
D510,511	0B12584A	SiD 1N4148
D512	0B12584A	SiD 1N4148
X501	0B92006A	X'tal 7.2MHz
L501	0B51277A	Motor Choke Coil 1mH K
R501	0B09655A	RK 120 1/6W J
R502,503	0B09662A	RK 240 1/6W J
R504,505	0B09662A	RK 240 1/6W J
R506,507	0B09662A	RK 240 1/6W J
R508,509	0B09662A	RK 240 1/6W J
R510,511	0B09662A	RK 240 1/6W J
R512,513	0B09662A	RK 240 1/6W J
R514,515	0B09662A	RK 240 1/6W J
R516,517	0B09662A	RK 240 1/6W J
R518,519	0B09662A	RK 240 1/6W J
R520,521	0B09662A	RK 240 1/6W J
R522	0B09662A	RK 240 1/6W J
R523,524	0B09725A	RK 100K 1/6W J
R525,526	0B09725A	RK 100K 1/6W J
R527,528	0B09701A	RK 10K 1/6W J
R529,530	0B09689A	RK 3.3K 1/6W J
R531,532	0B09725A	RK 100K 1/6W J
R533	0B09725A	RK 100K 1/6W J
R534	0B09677A	RK 1K 1/6W J
R535,536	0B09701A	RK 10K 1/6W J
R537	0B09701A	RK 10K 1/6W J
R538,539	0B09725A	RK 100K 1/6W J
R540	0B09677A	RK 1K 1/6W J
R541	0B09701A	RK 10K 1/6W J
R542	0B09699A	RK 8.2K 1/6W J
R543	0B09721A	RK 68K 1/6W J
R544	0B09718A	RK 51K 1/6W J
R545	0B09725A	RK 100K 1/6W J
R546	0B09719A	RK 56K 1/6W J
R547,548	0B09749A	RK 1M 1/6W J
R549,550	0B09749A	RK 1M 1/6W J
R551	0B09701A	RK 10K 1/6W J
R552,553	0B09719A	RK 56K 1/6W J
R554,555	0B09725A	RK 100K 1/6W J
R556	0B09725A	RK 100K 1/6W J
R557,558	0B09701A	RK 10K 1/6W J
R559	0B09725A	RK 100K 1/6W J
C501	0B01405A	CE 1μ 50V
C502	0B09291A	CC 0.022μ 50V Z
C503	0B09288A	CC 1000P 50V K
C504	0B01403A	CE 47μ 16V
C505	0B09291A	CC 0.022μ 50V Z
C506	0B41900A	CC 39P 50V J
C507	0B09586A	CC 2200P 50V K
C508,509	0B09290A	CC 0.01μ 50V Z
C510	0B01403A	CE 47μ 16V
C511	0B09327A	CE 0.33μ 50V (LN)
C512	0B41298A	CML 0.1μ 50V J
C513	0B09290A	CC 0.01μ 50V Z
C514	0B40501A	CE 0.1F 5.5V
C515	0B09291A	CC 0.022μ 50V Z
C516,517	0B41740A	CC 33P 50V J
C518,519	0B01405A	CE 1μ 50V
C520,521	0B09291A	CC 0.022μ 50V Z
C522,523	0B09291A	CC 0.022μ 50V Z
C524,525	0B09291A	CC 0.022μ 50V Z
C526,527	0B09288A	CC 1000P 50V K
C528	0B09288A	CC 1000P 50V K

Schematic Ref. No.	Part No.	Description
CN1	0B83355A	7P Flat Cable BLK 240mm
CN2	0B83354A	5P Flat Cable BLK 300mm (TA-1 & TA-1A)
	0B83479A	6P Flat Cable BLK 300mm (TA-1E)
CN3	0B83347A	5P Connector Ass'y 350mm
Q-Q	0B83364A	Lead Wire BRN 80mm
R-R	0B83356A	18P Flat Cable GRY 50mm
S-S	0B83357A	7P Flat Cable GRY 50mm
T-T	0B83358A	2P Ribbon Cable 50mm
	0B08515A	Insu-Lock (3)

6.9. Control Switch & Display P.C.B. Ass'y

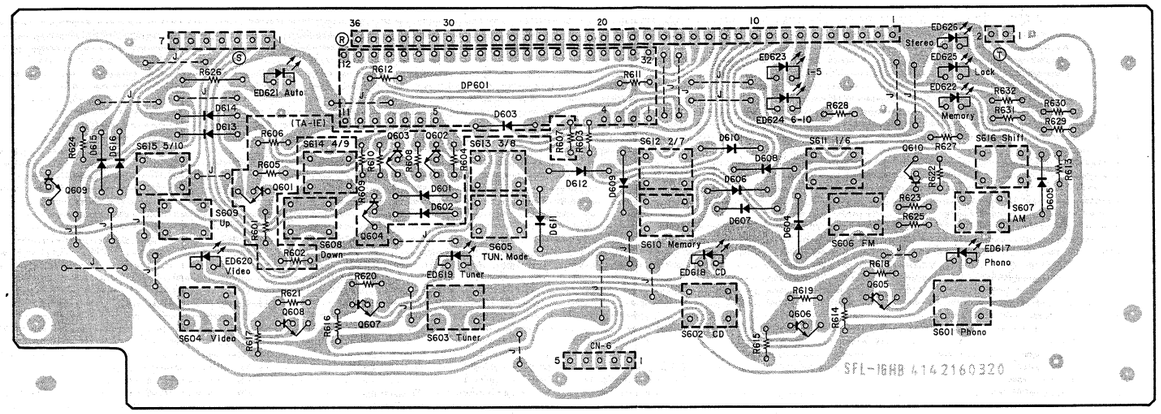


Fig. 6.9

6.10. Synthesizer P.C.B. Ass'y

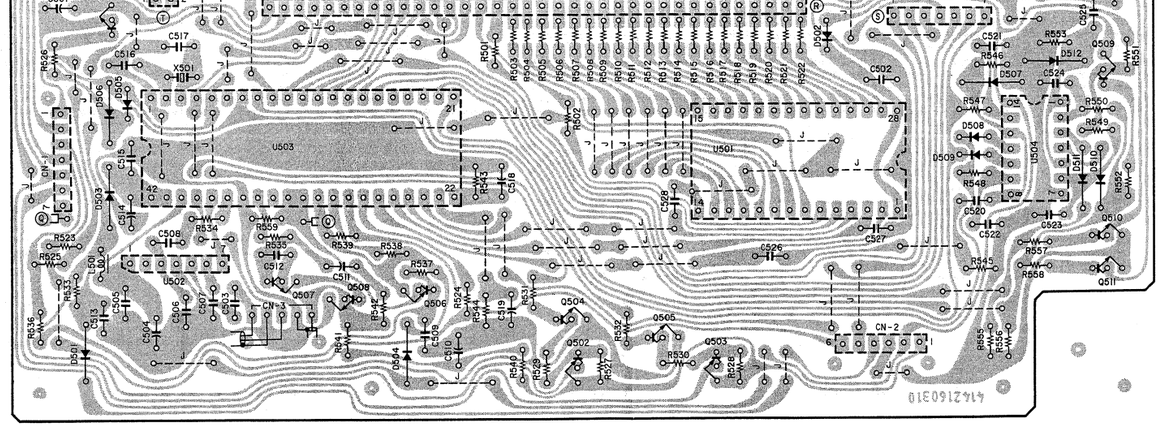


Fig. 6.10

6.11. Main P.C.B. Ass'y

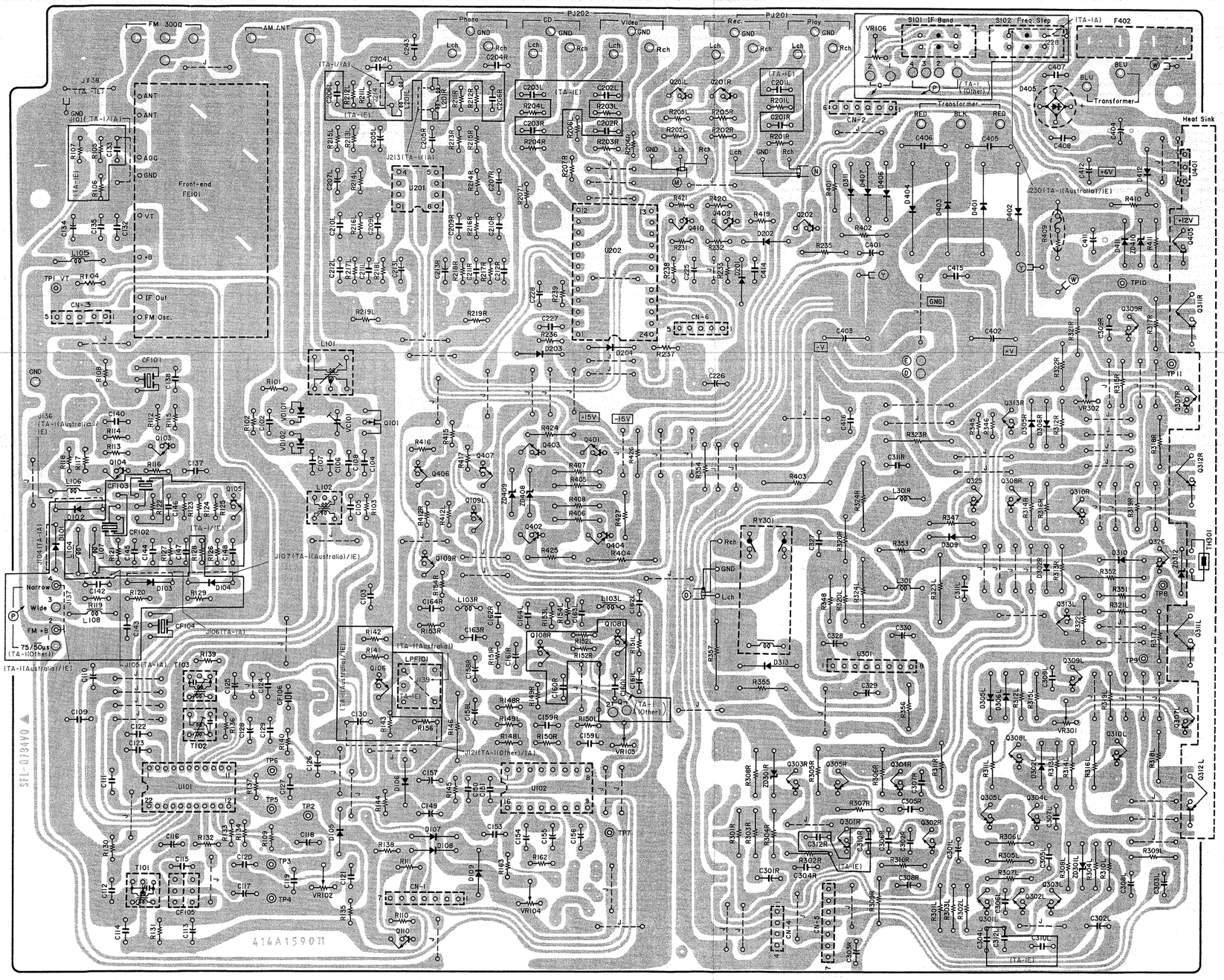


Fig. 6.11

Schematic Ref. No.	Part No.	Description
6.11. Main P.C.B. Ass'y		
	BA07312A	**Main P.C.B. Ass'y (TA-1 (Australia))**
	BA07310A	**Main P.C.B. Ass'y (TA-1 (Other))**
	BA07269A	**Main P.C.B. Ass'y (TA-1A)**
	BA07311A	**Main P.C.B. Ass'y (TA-1E)**
	0B60578A	Main P.C.B.
U101	0B11504A	IC LA1265
U102	0B11505A	IC μPC1235C
U201	0B06387A	IC NJM2043DD
U202	0B11506A	IC TC9152P
U301	0B11246A	IC μPC1237H
Q101	0B10249A	FET 2SK161 (GR)
Q103,104	0B06115A	TR 2SC1675 (K,L)
Q105	0B06115A	TR 2SC1675 (K,L) (TA-1 & TA-1E)
Q106	0B01872A	TR 2SC945L (P,Q) (TA-1 (Australia) & TA-1E)
Q108L,R	0B01872A	TR 2SC945L (P,Q) (TA-1 (Other))
Q109L,R	0B06299A	TR 2SC2878
Q110	0B01872A	TR 2SC945L (P,Q)
Q201L,R	0B06299A	TR 2SC2878
Q202	0B06013A	TR 2SA733 (P,Q)
Q301L,R	0B06142A	TR 2SC2240 (BL)
Q302L,R	0B06142A	TR 2SC2240 (BL)
Q303L,R	0B06142A	TR 2SC2240 (BL)
Q304L,R	0B10050A	TR 2SA970 (BL)
Q305L,R	0B10050A	TR 2SA970 (BL)
Q307L,R	0B06142A	TR 2SC2240 (BL)
Q308L,R	0B06142A	TR 2SC2240 (BL)
Q309L,R	0B10247A	TR 2SC2235 (Y)
Q310L,R	0B10246A	TR 2SA965 (Y)
Q313L,R	0B06142A	TR 2SC2240 (BL)
Q325	0B10050A	TR 2SA970 (BL)
Q326	0B06372A	TR 2SA953L (K,L)
Q401	0B01872A	TR 2SC945L (P,Q)
Q402	0B06013A	TR 2SA733 (P,Q)
Q403	0B01872A	TR 2SC945L (P,Q)
Q404	0B06013A	TR 2SA733 (P,Q)
Q406	0B06013A	TR 2SA733 (P,Q)
Q407	0B01872A	TR 2SC945L (P,Q)
Q409	0B06013A	TR 2SA733 (P,Q)
Q410	0B01872A	TR 2SC945L (P,Q)
ZD301L,R	0B12613A	ZD 4.7V RD4.7EB23
ZD312	0B06290A	ZD 5.6V RD5.6 EB2
ZD408,409	0B12615A	ZD 15V RD15EB2
ZD410	0B12614A	ZD 12V RD12EB2
D101,102	0B12584A	SiD 1N4148 (TA-1 (Other))
D103,104	0B12584A	SiD 1N4148 (TA-1 (Other))
D105,106	0B12584A	SiD 1N4148
D107,108	0B12584A	SiD 1N4148
D109	0B12584A	SiD 1N4148
D201,202	0B12584A	SiD 1N4148
D203,204	0B12584A	SiD 1N4148
D302L,R	0B12584A	SiD 1N4148
D305L,R	0B12584A	SiD 1N4148
D306L,R	0B12584A	SiD 1N4148
D309,310	0B12584A	SiD 1N4148
D311	0B12586A	SiD 1N4002
D313	0B12586A	SiD 1N4002
D401,402	0B12605A	SiD 1N5402
D403,404	0B12605A	SiD 1N5402
D405	0B12604A	Diode Bridge W02M
D406,407	0B12586A	SiD 1N4002
D411	0B12584A	SiD 1N4148
D412	0B12584A	SiD 1N4148
VD101,102	0B12606A	Vari-Cap KV1236Z1
CF101	0B41899A	Ceramic Filter SFE10.7MA5-RED
CF102,103	0B41928A	Ceramic Filter (TA-1 & TA-1E)
CF104	0B41899A	Ceramic Filter SFE10.7MA5-RED
CF105	0B41897A	Ceramic Filter SAZ450B
CF106	0B41898A	Ceramic Filter BFU450CN
LPF101	0B51289A	Low Pass Filter (TA-1E)

Schematic Ref. No.	Part No.	Description
T101	0B51271A	AM IFT Coil
T102	0B51272A	FM DET (A) Coil
T103	0B51273A	FM DET (B) Coil
L101	0B51269A	AM ANT Coil
L102	0B51270A	AM OSC Coil
L103L,R	0B51276A	Inductor 39mH K
L104	0B51274A	P. Coil 22μH K-P (TA-1 & TA-1E)
L105,106	0B51274A	P. Coil 22μH K-P
L107	0B51274A	P. Coil 22μH K-P (TA-1 & TA-1E)
L108	0B51274A	P. Coil 22μH K-P (TA-1 (Other))
L201L,R	0B51266A	Audio Coil 48μH (TA-1E)
L301L,R	0B51275A	Audio Coil 1.8μH
VR102	0B32128A	Semi VR 20K
VR104	0B32126A	Semi VR 5K
VR105	0B32132A	Semi VR 500K
VR106	0B32141A	Semi VR 250K (TA-1 (Other))
VR301,302	0B32126A	Semi VR 5K
R101	0B09701A	RK 10K 1/6W J
R102	0B09717A	RK 47K 1/6W J
R103	0B09669A	RK 470 1/6W J
R104	0B09677A	RK 1K 1/6W J
R105	0B09725A	RK 100K 1/6W J (TA-1E)
R106	0B09721A	RK 68K 1/6W J (TA-1E)
R107	0B09727A	RK 120K 1/6 W J (TA-1E)
R108	0B09637A	RK 22 1/6W J
R109	0B09695A	RK 5.6K 1/6W J
R110	0B09701A	RK 10K 1/6W J
R111	0B09701A	RK 10K 1/6W J
R112	0B09687A	RK 2.7K 1/6W J
R113	0B09637A	RK 22 1/6W J
R114	0B09667A	RK 390 1/6W J
R115	0B09699A	RK 8.2K 1/6W J
R116	0B09665A	RK 330 1/6W J
R117	0B09677A	RK 1K 1/6W J
R118	0B09665A	RK 330 1/6W J
R119,120	0B09693A	RK 4.7K 1/6W J (TA-1 (Other))
R121	0B09693A	RK 4.7K 1/6W J (TA-1 & TA-1E)
R122	0B09665A	RK 330 1/6W J (TA-1 & TA-1E)
R123	0B09689A	RK 3.3K 1/6W J (TA-1 & TA-1E)
R124	0B09699A	RK 8.2K 1/6W J (TA-1 & TA-1E)
R125	0B09671A	RK 560 1/6W J (TA-1 & TA-1E)
R126	0B09647A	RK 56 1/6W J (TA-1 & TA-1E)
R127	0B09677A	RK 1K 1/6W J (TA-1 & TA-1E)
R128	0B09693A	RK 4.7K 1/6W J (TA-1 (Other))
R129	0B09689A	RK 3.3K 1/6W J (TA-1 (Other))
R130	0B09677A	RK 1K 1/6W J
R131	0B09721A	RK 68K 1/6W J
R132,133	0B09701A	RK 10K 1/6W J
R134	0B09689A	RK 3.3K 1/6W J
R135	0B09709A	RK 22K 1/6W J (TA-1 (Australia) & TA-1E)
	0B09717A	RK 47K 1/6W J (TA-1 (Other) & TA-1A)
R136	0B09695A	RK 5.6K 1/6W J
R137	0B09713A	RK 33K 1/6W J (TA-1 & TA-1E)
	0B09711A	RK 27K 1/6W J (TA-1A)
R138	0B09701A	RK 10K 1/6W J
R139	0B09689A	RK 3.3K 1/6W J
R140	0B09651A	RK 82 1/6W J
R141	0B09745A	RK 680K 1/6W J (TA-1 (Australia) & TA-1E)
R142	0B09697A	RK 6.8K 1/6W J (TA-1 (Australia) & TA-1E)
R143	0B09689A	RK 3.3K 1/6W J (TA-1 (Australia) & TA-1E)
R144,145	0B09717A	RK 47K 1/6W J
R146	0B20513A	RK 56 1/2W J
R148L,R	0B09709A	RK 22K 1/6W J
R149L,R	0B09701A	RK 10K 1/6W J
R150L,R	0B09717A	RK 47K 1/6W J
R151L,R	0B09689A	RK 3.3K 1/6W J
R152L,R	0B09725A	RK 100K 1/6W J (TA-1 (Other))
R153L,R	0B09689A	RK 3.3K 1/6W J
R154L,R	0B09683A	RK 1.8K 1/6W J
R156	0B09717A	RK 47K 1/6W J (TA-1 (Australia) & TA-1E)
R162	0B09677A	RK 1K 1/6W J
R163	0B09705A	RK 15K 1/6W J
R201L,R	0B09733A	RK 220K 1/6W J
R202L,R	0B09669A	RK 470 1/6W J
R203L,R	0B09733A	RK 220K 1/6W J
R204L,R	0B09733A	RK 220K 1/6W J
R205L,R	0B09701A	RK 10K 1/6W J
R206L,R	0B09661A	RK 220 1/6W J
R207L,R	0B09661A	RK 220 1/6W J
R211L,R	0B09657A	RK 150 1/6W J
R212L,R	0B09743A	RK 560K 1/6W J
R213L,R	0B09718A	RK 51K 1/6W J
R214L,R	0B09677A	RK 1K 1/6W J
R215L,R	0B09725A	RK 100K 1/6W J
R216L,R	0B22542A	RM 560K 1/6W F
R217L,R	0B22419A	RM 47.0K 1/6W F
R218L,R	0B09677A	RK 1K 1/6W J (TA-1 & TA-1A)
	0B09653A	RK 100 1/6W J (TA-1E)
R219L,R	0B09725A	RK 100K 1/6W J
R231	0B09725A	RK 100K 1/6W J
R232,233	0B09701A	RK 10K 1/6W J
R235	0B01888A	RK 10K 1/4W J
R236	0B09725A	RK 100K 1/6W J
R237	0B09653A	RK 100 1/6W J
R238,239	0B09713A	RK 33K 1/6W J
R301L,R	0B01889A	RK 100K 1/4W J
R302L,R	0B01857A	RK 1K 1/4W J
R303L,R	0B01889A	RK 100K 1/4W J
R304L,R	0B09263A	RK 12K 1/4W J
R305L,R	0B01681A	RK 3.3K 1/4W J
R306L,R	0B01681A	RK 3.3K 1/4W J
R307L,R	0B05691A	RK 390 1/4W J
R308L,R	0B05622A	RK 2.2K 1/4W J
R309L,R	0B01889A	RK 100K 1/4W J
R310L,R	0B05576A	RK 470 1/4W J
R311L,R	0B24186A	RF 300 1/4W J
R312L,R	0B01681A	RK 3.3K 1/4W J
R313L,R	0B24185A	RF 220 1/4W J
R314L,R	0B24185A	RF 220 1/4W J
R315L,R	0B05795A	RK 150 1/4W J
R316L,R	0B05795A	RK 150 1/4W J
R317L,R	0B24180A	RC 0.22 2W K
R318L,R	0B24180A	RC 0.22 2W K
R319L,R	0B05577A	RK 330 1/4W J
R320L,R	0B01889A	RK 100K 1/4W J
R321L,R	0B01888A	RK 10K 1/4W J
R322L,R	0B05622A	RK 2.2K 1/4W J
R323L,R	0B24181A	RF 10 1W J
R324L,R	0B20433A	RK 10 1/2W J
R345	0B09699A	RK 8.2K 1/6W J
R346	0B09733A	RK 220K 1/6W J
R347	0B01888A	RK 10K 1/4W J
R348	0B01889A	RK 100K 1/4W J
R351	0B01682A	RK 6.8K 1/4W J
R352	0B20512A	RK 2.2K 1/2W J
R353	0B05641A	RK 47K 1/4W J
R354	0B01683A	RK 15K 1/4W J
R355	0B09263A	RK 12K 1/4W J
R356	0B05508A	RK 56K 1/4W J
R357	0B24183A	RF 560 2W J
R401	0B05622A	RK 2.2K 1/4W J
R402	0B05614A	RK 1.8K 1/4W J
R403,404	0B20511A	RK 1K 1/2W J
R405,406	0B09263A	RK 12K 1/4W J
R407,408	0B01933A	RK 220 1/4W J
R409	0B24187A	Fuse Resistor 22 1/4W J
R410	0B01681A	RK 3.3K 1/4W J
R411	0B05576A	RK 470 1/4W J
R412L,R	0B09701A	RK 10K 1/6W J
R415	0B09725A	RK 100K 1/6W J
R416,417	0B09701A	RK 10K 1/6W J
R419	0B09725A	RK 100K 1/6W J
R420,421	0B09701A	RK 10K 1/6W J
R424,425	0B09263A	RK 12K 1/4W J
R426,427	0B01888A	RK 10K 1/4W J
VC101	0B42010A	C Trimmer 10P
C102,103	0B09291A	CC 0.022μ 50V Z
C104	0B09379A	CC 560P 50V K
C105	0B09291A	CC 0.022μ 50V Z
C106	0B41896A	CSP 390P 100V J
C107	0B41739A	CC 22P 50V J
C108	0B09276A	CC 5P 50V C
C109	0B09291A	CC 0.022μ 50V Z
C110	0B01674A	CE 10μ 25V
C111	0B09290A	CC 0.01μ 50V Z
C112	0B09387A	CC 0.047μ 50V Z
C113	0B01403A	CE 47μ 16V
C114	0B09387A	CC 0.047μ 50V Z
C115	0B41880A	CC 82P 50V J
C116	0B40029A	CE 4.7μ 50V
C117	0B01863A	CE 3.3μ 50V
C118	0B01674A	CE 10μ 25V
C119	0B09291A	CC 0.022μ 50V Z
C120	0B09290A	CC 0.01μ 50V Z
C121	0B01780A	CML 0.1μ 50V J (TA-1 (Australia) & TA-1E)
	0B05682A	CML 0.068μ 50V J (TA-1 (Other) & TA-1A)
C122,123	0B09291A	CC 0.022μ 50V Z
C124	0B09291A	CC 0.022μ 50V Z
C125	0B40029A	CE 4.7μ 50V
C126	0B01400A	CE 100μ 16V
C127	0B09291A	CC 0.022μ 50V Z
C128	0B01405A	CE 1μ 50V
C129	0B41071A	CC 100P 50V J
C130	0B01674A	CE 10μ 25V (TA-1 (Australia) & TA-1E)
C132	0B09291A	CC 0.022μ 50V Z
C133	0B09291A	CC 0.022μ 50V Z (TA-1E)
C134	0B01400A	CE 100μ 16V
C135	0B09291A	CC 0.022μ 50V Z
C137,138	0B09291A	CC 0.022μ 50V Z
C140	0B09291A	CC 0.022μ 50V Z
C142,143	0B09291A	CC 0.022μ 50V Z (TA-1 (Other))
C144,145	0B09291A	CC 0.022μ 50V Z (TA-1 & TA-1E)
C146,147	0B09291A	CC 0.022μ 50V Z (TA-1 & TA-1E)
C148	0B09291A	CC 0.022μ 50V Z (TA-1 & TA-1E)
C149	0B01674A	CE 10μ 25V
C150	0B09286A	CC 470P 50V K
C151	0B05796A	CML 0.047μ 50V J
C153	0B09270A	CSP 470P 100V J
C154	0B01863A	CE 3.3μ 50V
C155,156	0B01405A	CE 1μ 50V
C157	0B01400A	CE 100μ 16V
C158L,R	0B01674A	CE 10μ 25V
C159L,R	0B05550A	CML 1000P 50V J (TA-1 & TA-1E)
	0B01913A	CML 1800P 50V J (TA-1A)
C160L,R	0B09783A	CPP 820P 100V J (TA-1 (Other))
C161L,R	0B01674A	CE 10μ 25V
C162L,R	0B01913A	CML 1800P 50V J
C163L,R	0B05550A	CML 1000P 50V J
C164L,R	0B01804A	CML 3900P 50V J
C201L,R	0B05550A	CML 1000P 50V J (TA-1E)
C202L,R	0B05550A	CML 1000P 50V J (TA-1E)
C203L,R	0B05550A	CML 1000P 50V J (TA-1E)
C204L,R	0B41894A	CSP 100P 50V J (TA-1 & TA-1A)
	0B41071A	CC 100P 50V Z (TA-1E)
C205L,R	0B09223A	CE 1μ 50V (LN)
C206L,R	0B41738A	CC 390P 50V J (TA-1E)
C207L,R	0B09148A	CE 10μ 25V (LN)
C209L,R	0B05652A	CML 4700P 50V J
C210L,R	0B09270A	CPP 470P 100V J
C211L,R	0B05653A	CML 1500P 50V J
C212L,R	0B41895A	CSP 150P 50V J
C213L,R	0B01405A	CE 1μ 50V
C225	0B01403A	CE 47μ 16V
C226	0B40083A	CE 2200μ 16V
C227	0B09291A	CC 0.022μ 50V Z
C228	0B40111A	CE 0.47μ 50V
C243	0B01603A	CML 0.1μ 50V K (TA-1 & TA-1A)
	0B09387A	CC 0.047μ 50V Z (TA-1E)
C301L,R	0B09223A	CE 1μ 50V (LN)
C302L,R	0B09332A	CE 2.2μ 50V (LN)
C303L,R	0B01674A	CE 10μ 25V
C304L,R	0B09322A	CPP 330P 100V J
C305L,R	0B05550A	CML 1000P 50V J
C306L,R	0B09277A	CC 10P 50V D
C307L,R	0B41893A	CSP 56P 50V J
C308L,R	0B05885A	CE 100μ 10V
C309L,R	0B41894A	CSP 100P 50V J
C310L,R	0B41734A	CSP 220P 100V J (TA-1E)
C311L,R	0B05796A	CML 0.047μ 50V J
C312L,R	0B41071A	CC 100P 50V J (TA-1E)
C327	0B40250A	CE 100μ 16V (BP)
C328	0B09372A	CE 2.2μ 50V
C329	0B40029A	CE 4.7μ 50V
C330	0B01400A	CE 100μ 16V
C401	0B09372A	CE 2.2μ 50V
C402,403	0B40505A	CE 6800μ 50V
C404	0B40082A	CE 1000μ 16V
C405,406	0B41901A	CC 0.022μ 500V Z
C407,408	0B09291A	CC 0.022μ 50V Z
C411	0B01392A	CE 470μ 16V
C412	0B01400A	CE 100μ 16V
C414	0B09291A	CC 0.022μ 50V Z
C415,416	0B05796A	CML 0.047μ 50V J
RY301	0B90331A	Relay VB-24MBU
S101,102	0B70139A	Slide Switch 2-2 (TA-1 (Other))
F402	0B90289A	Fuse T1A 250V (TA-1 (Australia) & TA-1E)
	0B90329A	Fuse T1A 125V (TA-1 (Other) & TA-1A)
PJ201	0B81939A	4P RCA Jack
PJ202	0B81940A	6P RCA Jack
CN1	0B81944A	7P Post
CN2	0B81943A	6P Post (TA-1 & TA-1E)
	0B81942A	5P Post (TA-1A)
CN3	0B81762A	5P-T Post
CN4	0B81761A	4P-T Post
CN5	0B81944A	7P Post
CN6	0B81942A	5P Post
D/E-D/E	0B83361A	2P Ribbon Cable 220mm
FE101	0B91025A	Front-end FE306-A14 (TA-1 & TA-1A)
	0B91026A	Front-end FE407-G58 (TA-1E)
O-O	0B83359A	3P Ribbon Cable 500mm
P-P	0B83478A	4P Ribbon Cable 400mm (TA-1 (Other))
Q-Q	0B83477A	2P Ribbon Cable 200mm (TA-1 (Other))
W-W	0B83365A	Lead Wire BLK 100mm
Y-Y	0B83463A	Lead Wire BLK 60mm
	0B80201A	Silicon Tube 1φ 8m/m (for R317L,R) (4)
	0B80201A	Silicon Tube 1φ 8m/m (for R318L,R) (4)
	0B80204A	Terminal Pin (K) (27)
	0B81848A	Fuse Holder (2) Z-N1152-02
	0B81931A	Antenna Terminal (TA-1 & TA-1A) (1)
	0B81979A	Antenna Terminal (TA-1E) (1)
	0B83362A	Lead Wire BLK 180mm (1)
	0B83482A	Terminal Pin (L) (TA-1E) (4)
	0M04191A	Fuse Label T1A 250V (TA-1E) (1)

Heat Sink Ass'y

	BA07309A	Heat Sink Ass'y
U401	0B11508A	IC MC7806CT
Q311L,R	0B10245A	TR 2SC3181N (O,R)
Q312L,R	0B10244A	TR 2SA1264N (O,R)
Q405	0B10248A	TR 2SD313 (E)
TH301	0B19607A	Thermistor 50KD-5
	0J05609A	Heat Sink Holder F (1)
	0J05608A	Heat Sink (1)
	0J05671A	Insulator TO-3P (4)
	0B80202A	Glass Tube 30 (2)
	0J05615A	Thermistor Holder (1)
	0J05672A	Insulator TO-220 (2)
	0B08594A	Transistor Bush (2)
	0J05610A	Heat Sink Holder R (1)
	0E00868A	BT3x8 ⊕ Binding (6)
	0E00865A	BT3x10 ⊕ Binding (4)

Note: Refer to 5.3. Heat Sink Ass'y (B01).

7. SCHEMATIC DIAGRAMS

7.1. IC Block Diagrams

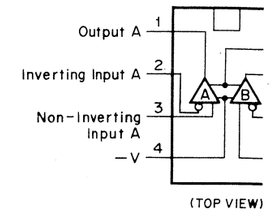


Fig. 7.1.1 Operational Amp

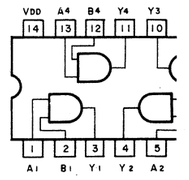


Fig. 7.1.2 AND Gate C-MO

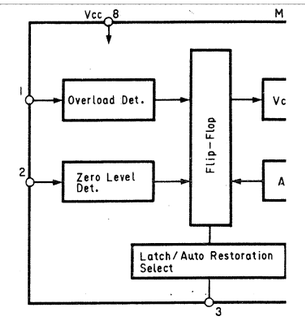


Fig. 7.1.3 Power Amp. Pro

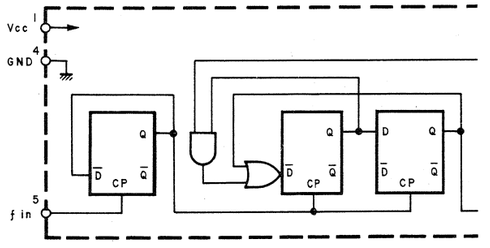


Fig. 7.1.4 ECL Prescalar (F

o.	Description	Schematic Ref. No.	Part No.	Description
2A	CML 4700P 50V J		0B81931A	Antenna Terminal
0A	CPP 470P 100V J			(TA-1 & TA-1A) (1)
3A	CML 1500P 50V J		0B81979A	Antenna Terminal
5A	CSP 150P 50V J			(TA-1E) (1)
5A	CE 1μ 50V		0B83362A	Lead Wire BLK
3A	CE 47μ 16V			180mm (1)
3A	CE 2200μ 16V		0B83482A	Terminal Pin (L)
1A	CC 0.022μ 50V Z			(TA-1E) (4)
1A	CE 0.47μ 50V		0M04191A	Fuse Label T1A
3A	CML 0.1μ 50V K			250V (TA-1E) (1)
	(TA-1 & TA-1A)			
7A	CC 0.047μ 50V Z			
	(TA-1E)	**Heat Sink Ass'y**		
3A	CE 1μ 50V (LN)			
2A	CE 2.2μ 50V (LN)		BA07309A	Heat Sink Ass'y
1A	CE 10μ 25V			
2A	CPP 330P 100V J	U401	0B11508A	IC MC7806CT
0A	CML 1000P 50V J	Q311L,R	0B10245A	TR 2SC3181N
7A	CC 10P 50V D			(O,R)
8A	CSP 56P 50V J	Q312L,R	0B10244A	TR 2SA1264N
6A	CE 100μ 10V			(O,R)
4A	CSP 100P 50V J	Q405	0B10248A	TR 2SD313 (E)
1A	CSP 220P 100V J	TH301	0B19607A	Thermistor 50KD-5
	(TA-1E)		0J05609A	Heat Sink Holder F
6A	CML 0.047μ 50V J			(1)
.A	CC 100P 50V J		0J05608A	Heat Sink (1)
	(TA-1E)		0J05671A	Insulator TO-3P (4)
0A	CE 100μ 16V (BP)		0B80202A	Glass Tube 30 (2)
2A	CE 2.2μ 50V		0J05615A	Thermistor Holder
0A	CE 4.7μ 50V			(1)
0A	CE 100μ 16V		0J05672A	Insulator TO-220
2A	CE 2.2μ 50V			(2)
2A	CE 6800μ 50V		0B08594A	Transistor Bush (2)
2A	CE 1000μ 16V		0J05610A	Heat Sink Holder R
A	CC 0.022μ 500V Z			(1)
A	CC 0.022μ 50V Z		0E00868A	BT3x8 ⊕ Binding (6)
2A	CE 470μ 16V		0E00865A	BT3x10 ⊕ Binding
1A	CE 100μ 16V			(4)
A	CC 0.022μ 50V Z			
6A	CML 0.047μ 50V J			Note: Refer to 5.3.
A	Relay VB-24MBU			Heat Sink Ass'y
0A	Slide Switch 2-2			(B01).
	(TA-1 (Other))			
A	Fuse T1A 250V			
	(TA-1 (Australia) &			
	TA-1E)			
A	Fuse T1A 125V			
	(TA-1 (Other) &			
	TA-1A)			
2A	4P RCA Jack			
0A	6P RCA Jack			
2A	7P Post			
0A	6P Post			
	(TA-1 & TA-1E)			
0A	5P Post (TA-1A)			
2A	5P-T Post			
2A	4P-T Post			
2A	7P Post			
2A	5P Post			
2A	2P Ribbon Cable			
	220mm			
2A	Front-end			
	FE306-A14			
	(TA-1 & TA-1A)			
2A	Front-end			
	FE407-G58			
	(TA-1E)			
0A	3P Ribbon Cable			
	500mm			
0A	4P Ribbon Cable			
	400mm (TA-1			
	(Other))			
2A	2P Ribbon Cable			
	200mm (TA-1			
	(Other))			
0A	Lead Wire BLK			
	100mm			
0A	Lead Wire BLK			
	60mm			
2A	Silicon Tube 1ϕ			
	8m/m (for R317L,R)			
	(4)			
2A	Silicon Tube 1ϕ			
	8m/m (for R318L,R)			
	(4)			
2A	Terminal Pin (K)			
	(27)			
2A	Fuse Holder (2)			
	Z-N1152-02			

7. SCHEMATIC DIAGRAMS

7.1. IC Block Diagrams

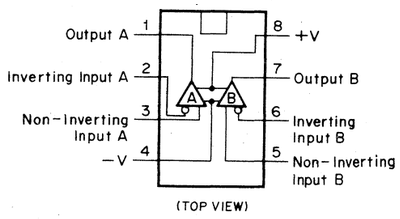


Fig. 7.1.1 Operational Amp. IC NJM2043DD

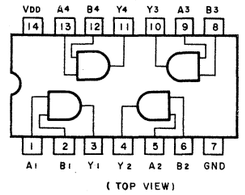


Fig. 7.1.2 AND Gate C-MOS IC μPD4081BC

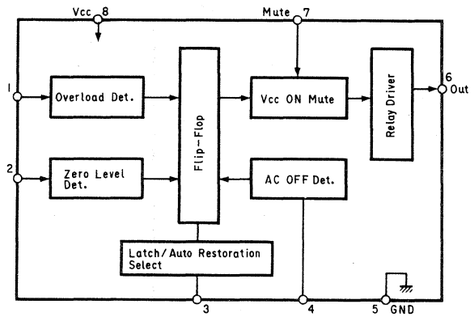


Fig. 7.1.3 Power Amp. Protector IC μPC1237H

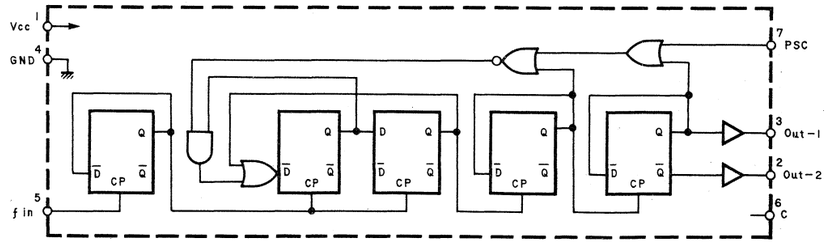


Fig. 7.1.4 ECL Prescalar (FM) IC TD6104P

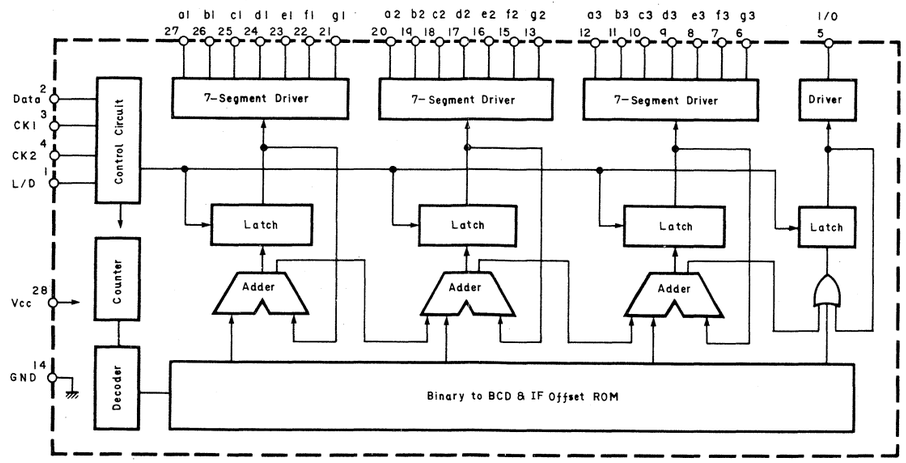


Fig. 7.1.5 Display Driver TD6301AP

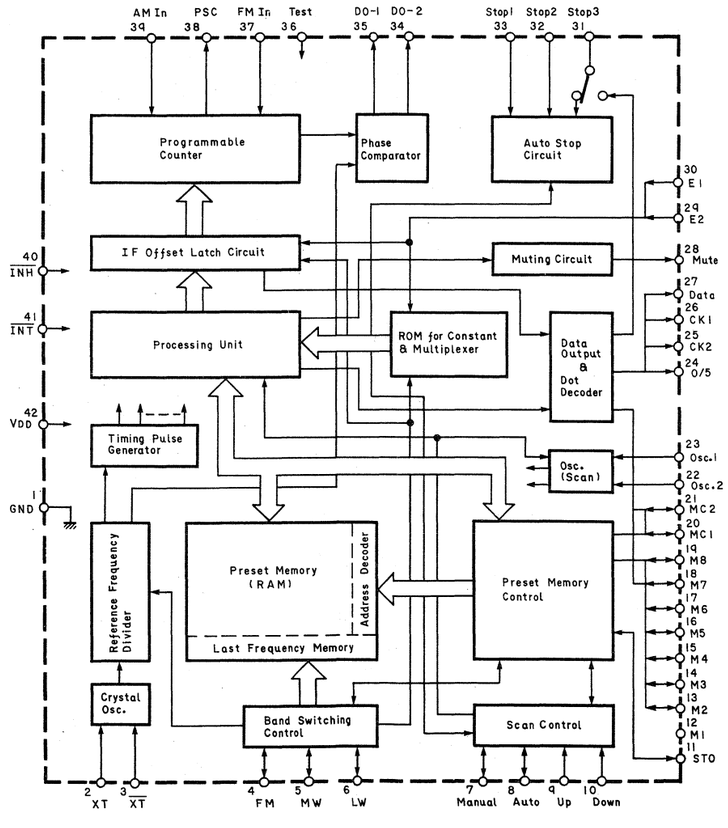


Fig. 7.1.6 PLL Synthesizer IC TC9147BP

7.2. Schematic Diagrams
7.2.1. Tuner Section

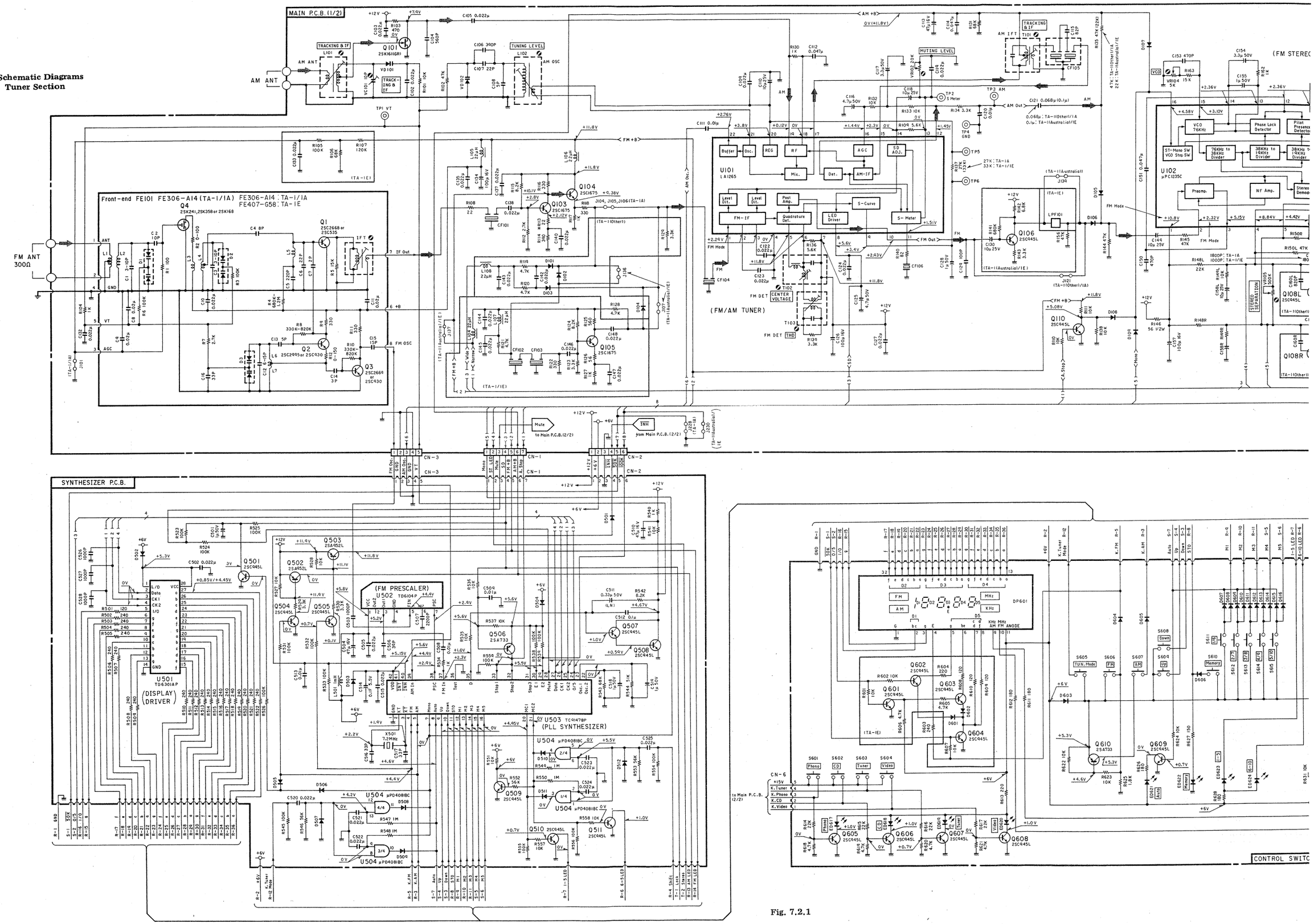
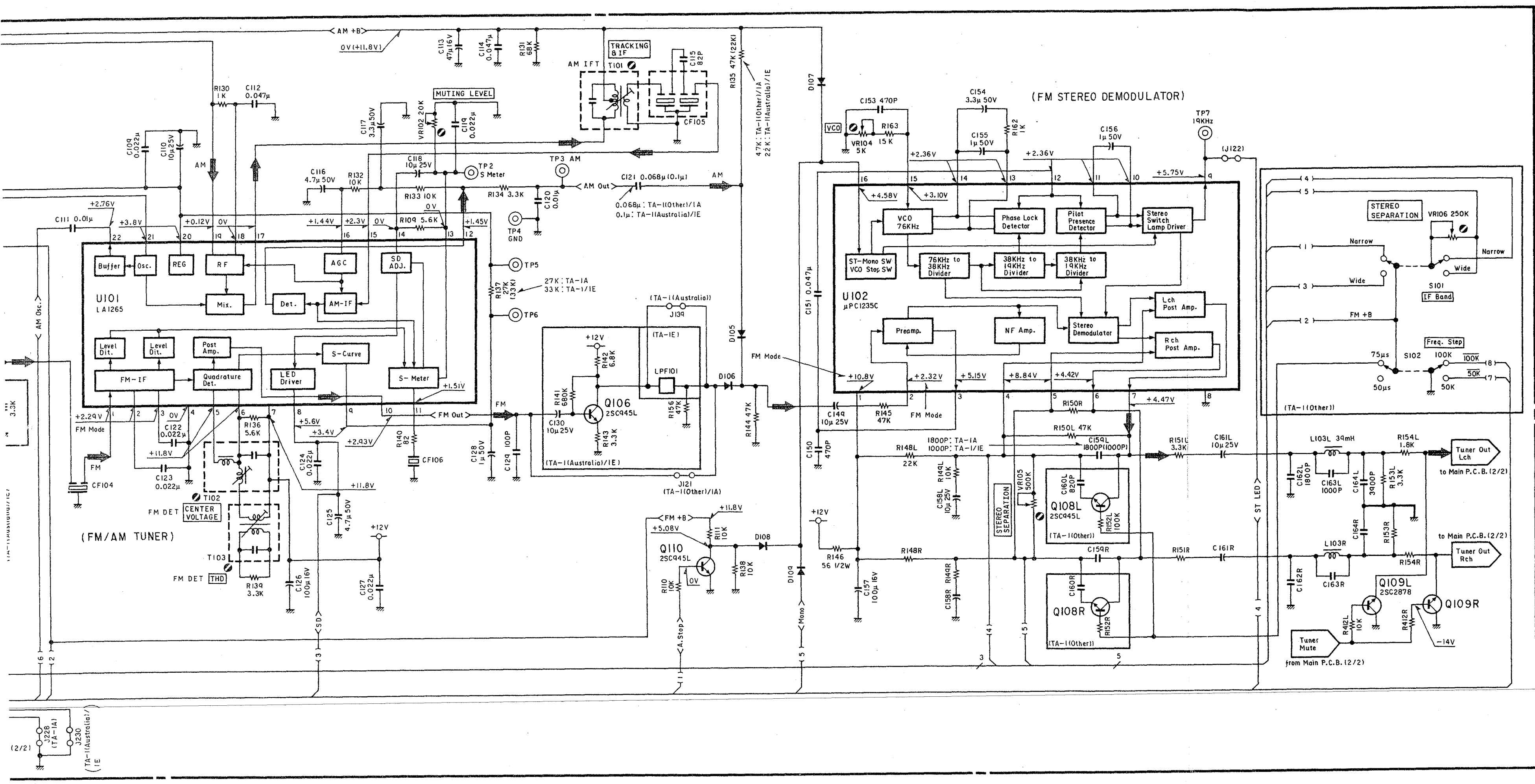


Fig. 7.2.1



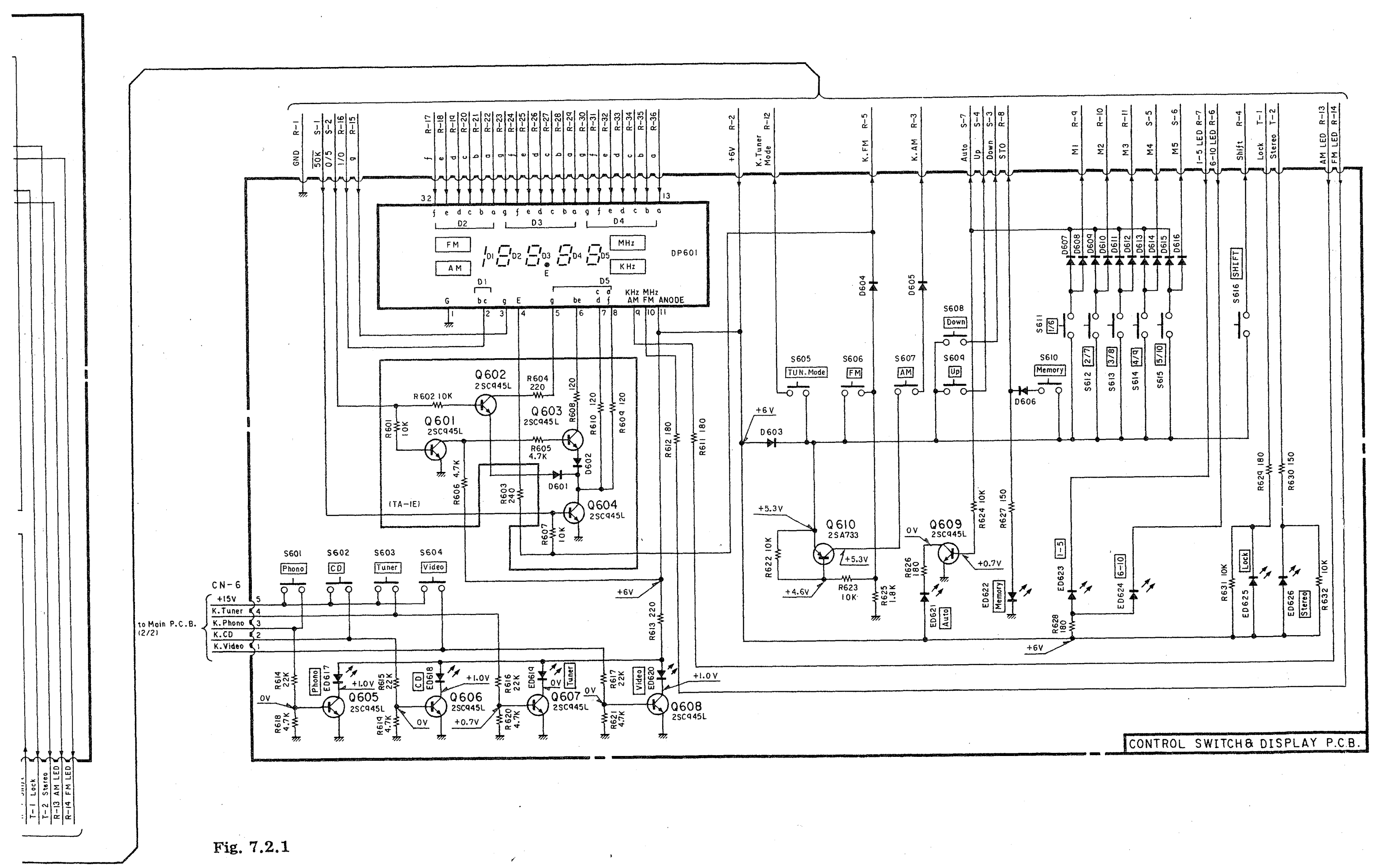
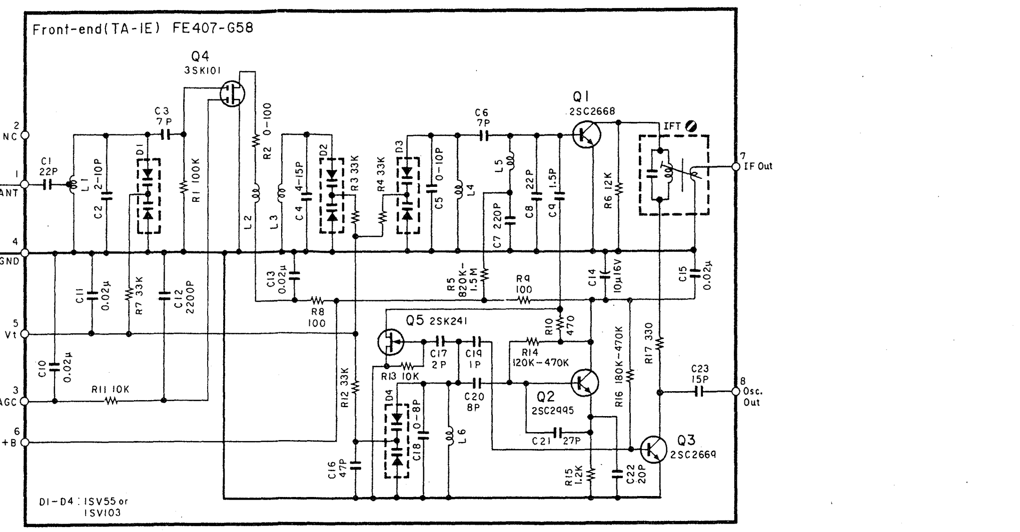
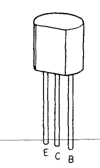


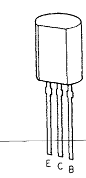
Fig. 7.2.1



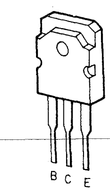
Front-end for TA-1E



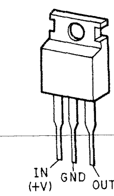
2SA733
2SA952
2SA953
2SA970
2SC945
2SC1675
2SC2240
2SC2878



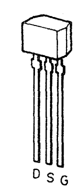
2SA965
2SC2235



2SA1264
2SC3181



2SD313



2SK161

Notes:
1. Diode is 1N4148 unless otherwise specified.
2. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.
4. Parts marked with ** indicate those for TA-1E.
5. Voltage measuring conditions
   - With no input signal applied to the input terminals.
   - With no lead connected to the speaker terminals.

7.2.2. Amplifier Section

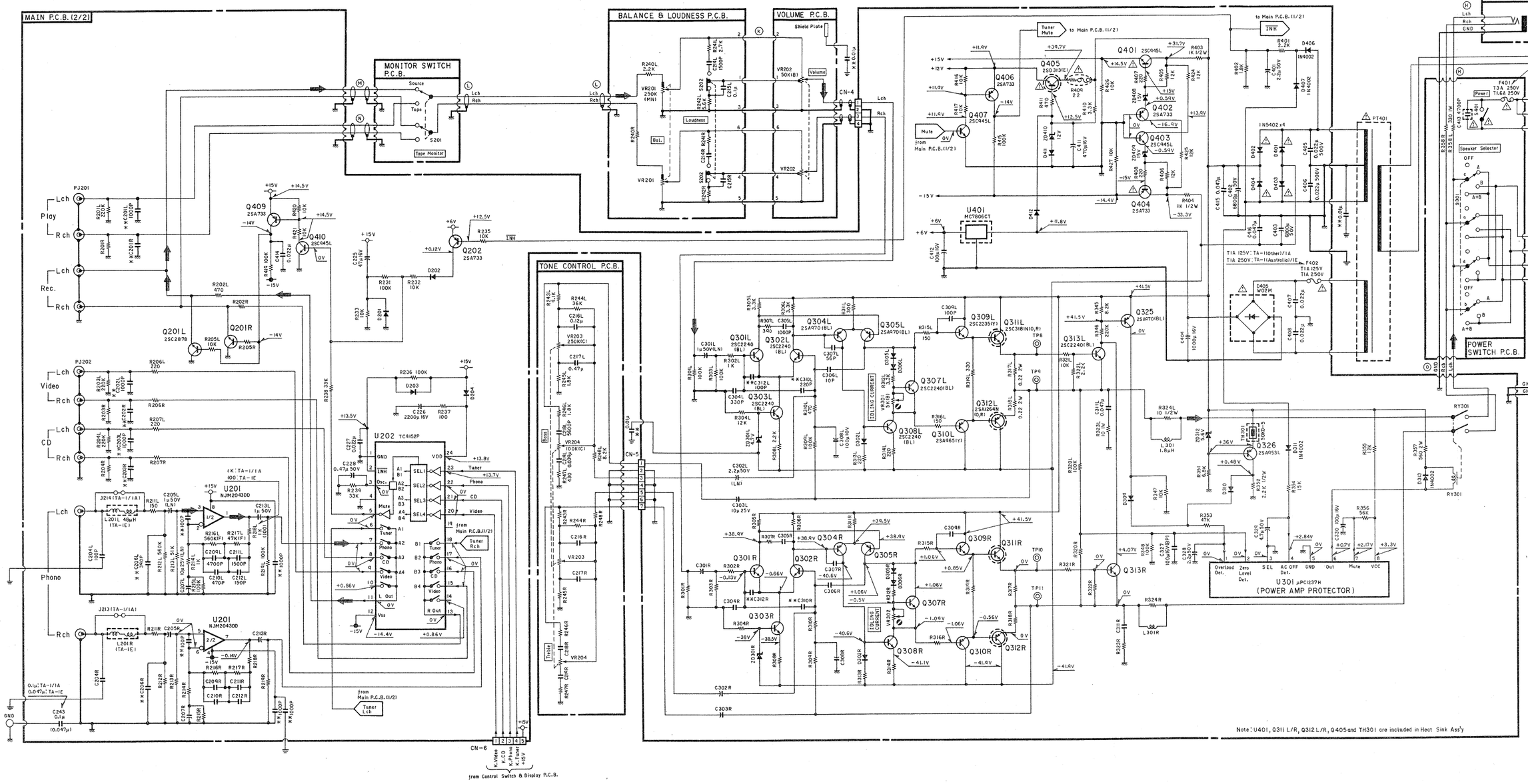


Fig. 7.2.2.

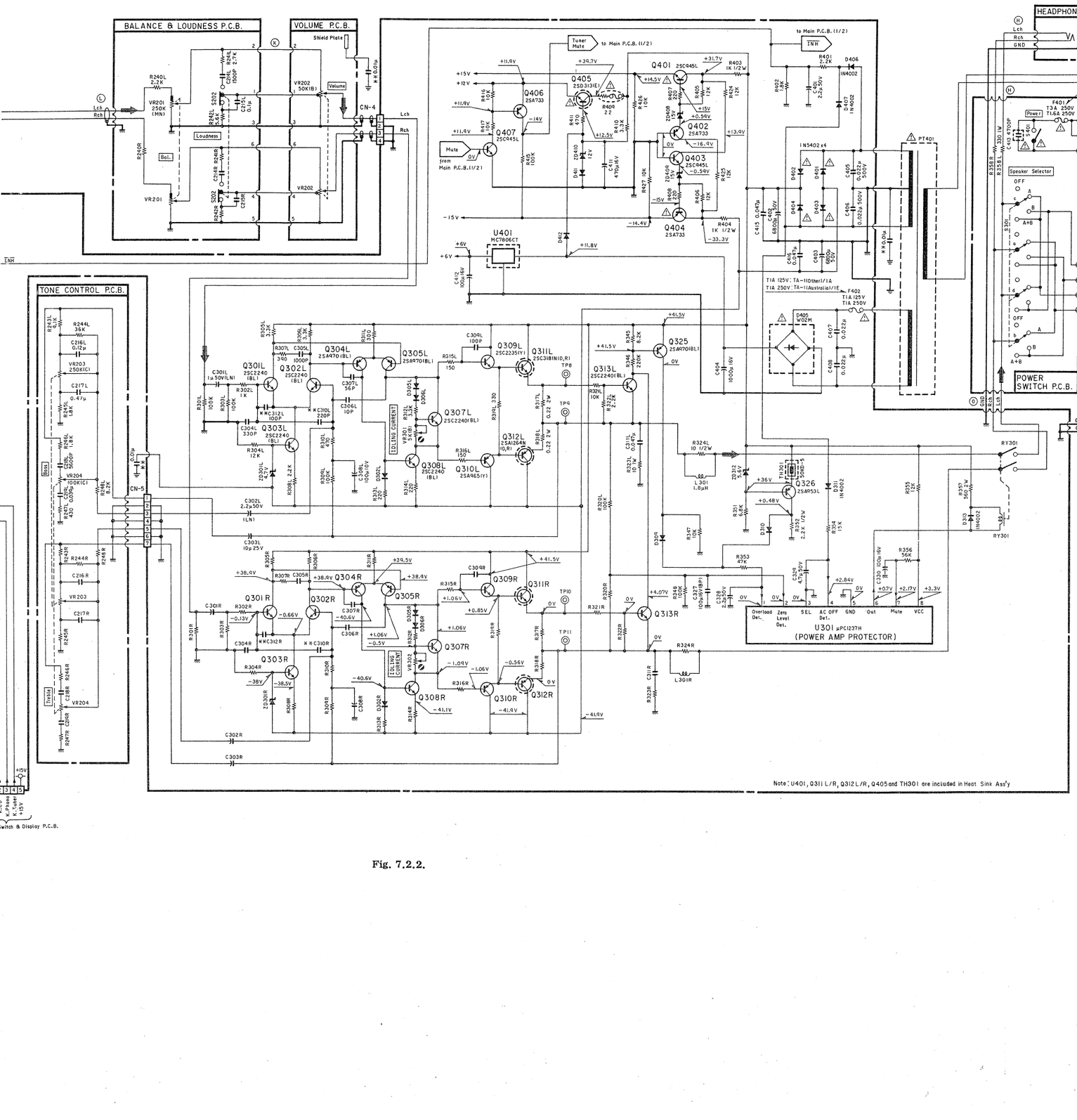
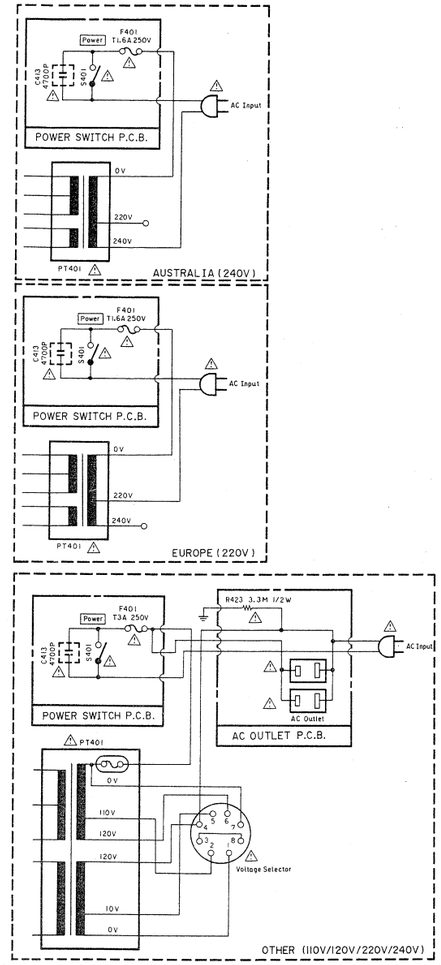


Fig. 7.2.2.



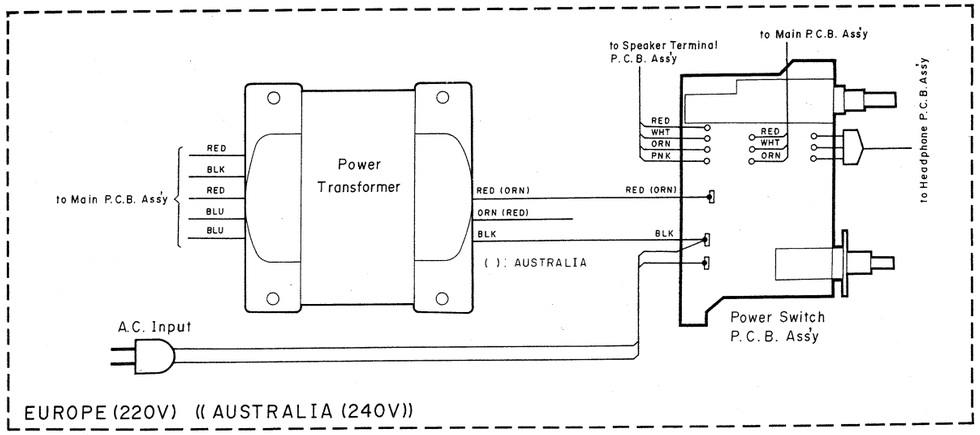
WARNING:

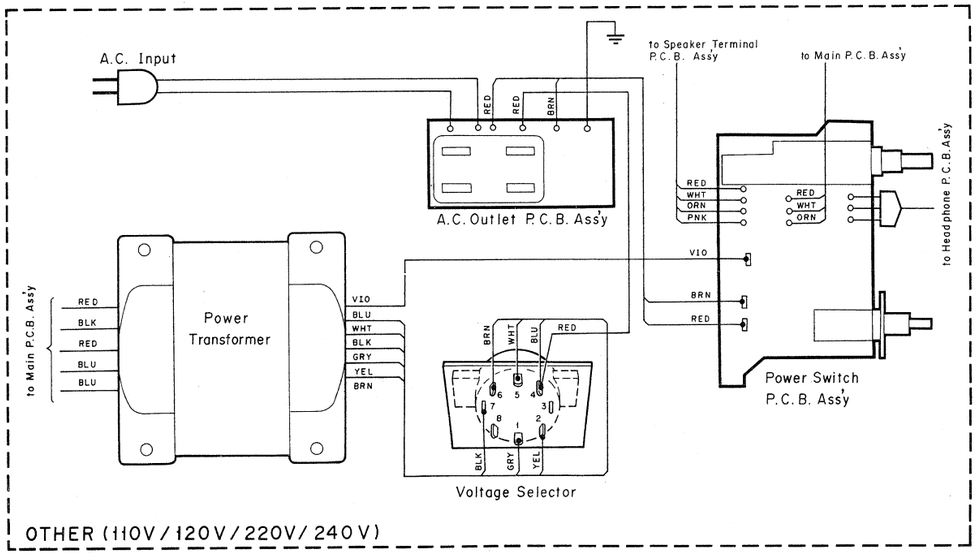
Parts marked with the symbol ⚠ have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

8. WIRING DIAGRAM





Notes: 1. Table of wire colors

BRN	— Brown	BLU	— Blue
RED	— Red	VIO	— Violet
ORN	— Orange	GRY	— Gray
YEL	— Yellow	WHT	— White
GRN	— Green	BLK	— Black

2. Component side view of the P.C.B. is illustrated unless otherwise specified.
3. Wire tube color is shown in ( ).

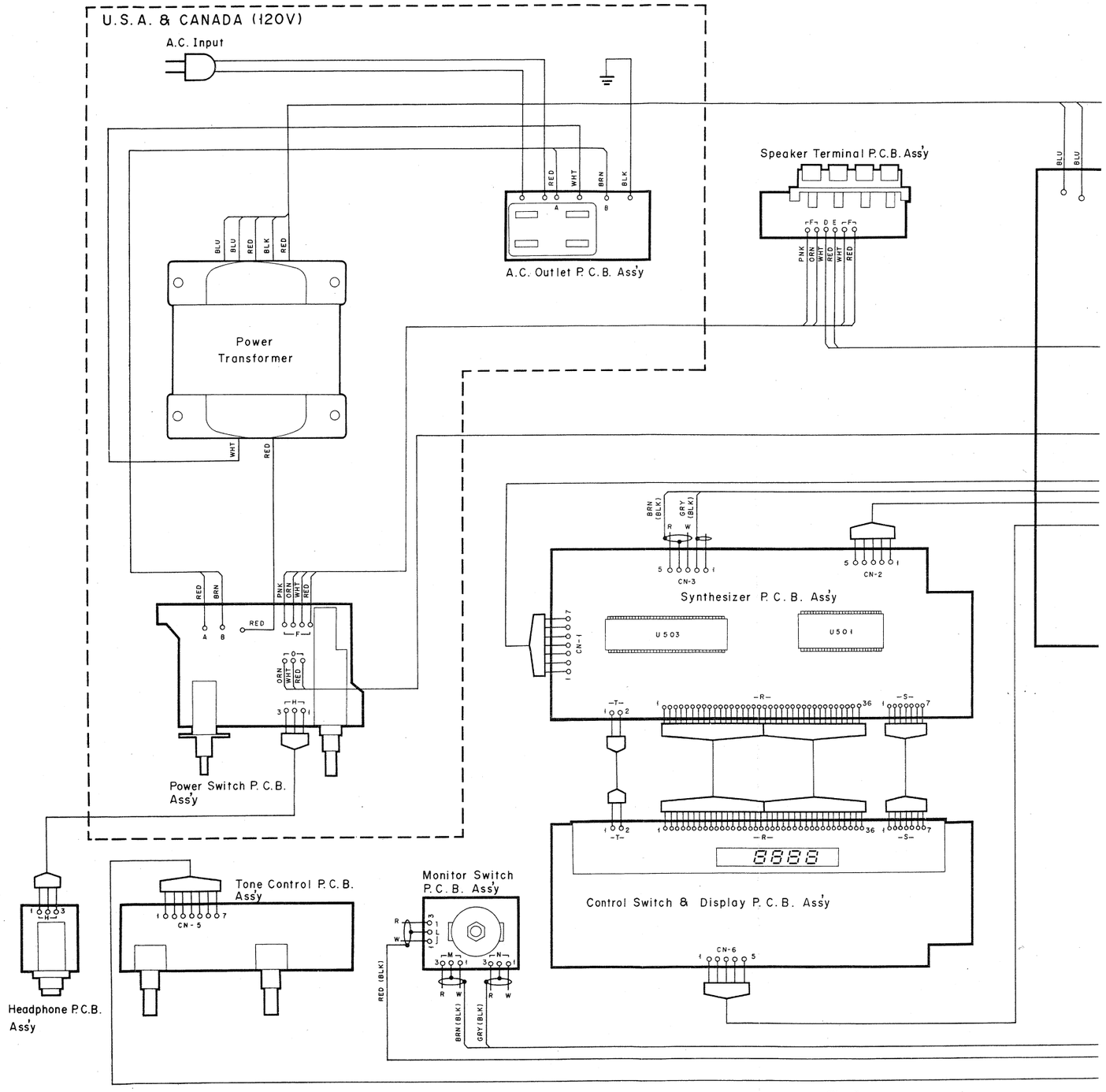


Fig. 8

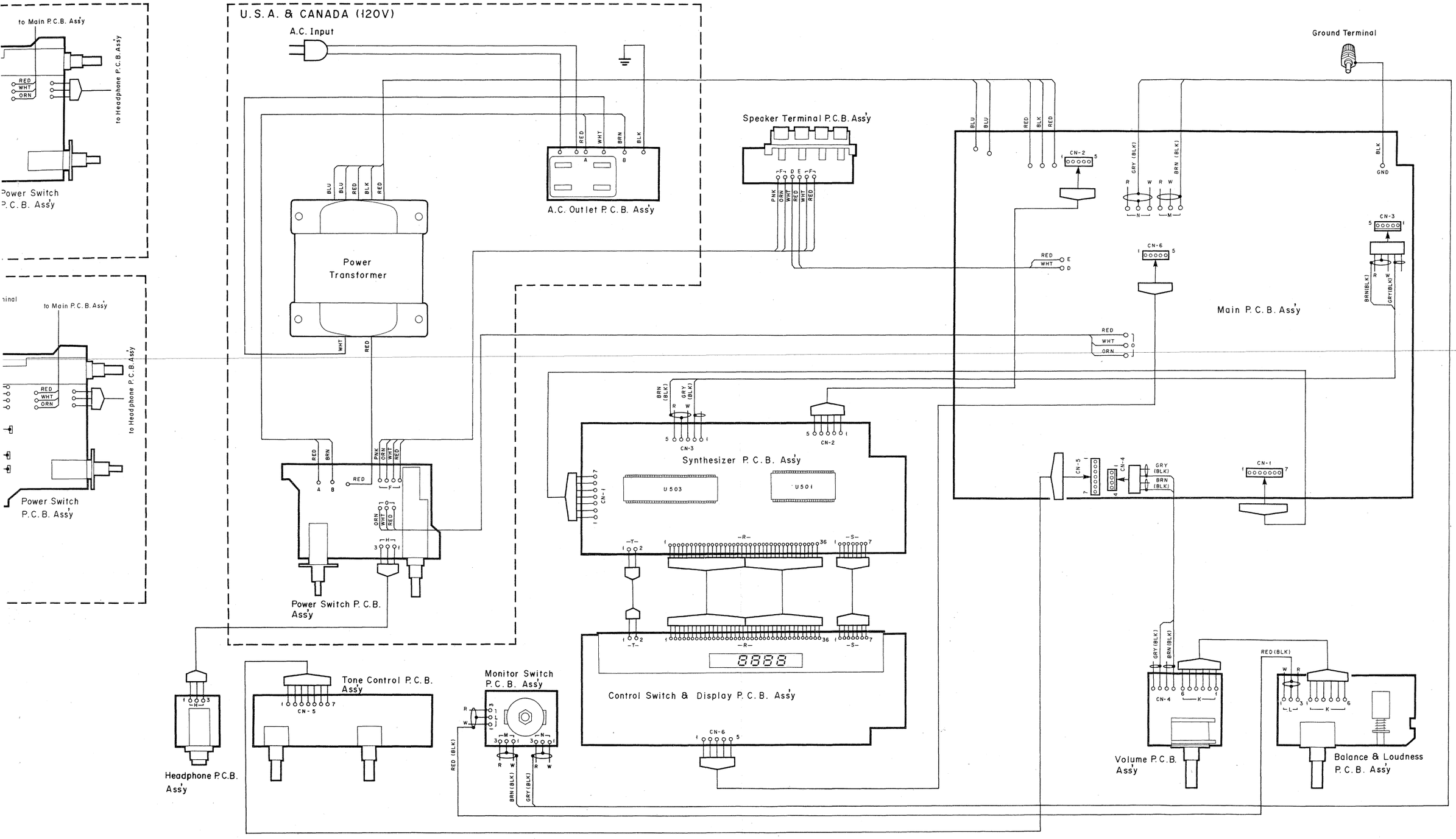

U.S.A. & CANADA (120V)
A.C. Input
Ground Terminal
Speaker Terminal P.C.B. Ass'y
A.C. Outlet P.C.B. Ass'y
Power Transformer
Main P.C.B. Ass'y
Synthesizer P.C.B. Ass'y
Control Switch & Display P.C.B. Ass'y
Power Switch P.C.B. Ass'y
Headphone P.C.B. Ass'y
Tone Control P.C.B. Ass'y
Monitor Switch P.C.B. Ass'y
Volume P.C.B. Ass'y
Balance & Loudness P.C.B. Ass'y
to Main P.C.B. Ass'y
to Headphone P.C.B. Ass'y
CN-1
CN-2
CN-3
CN-4
CN-5
CN-6
U503
U501
GND

Fig. 8

9. BLOCK DIAGRAMS

9.1. Tuner Section

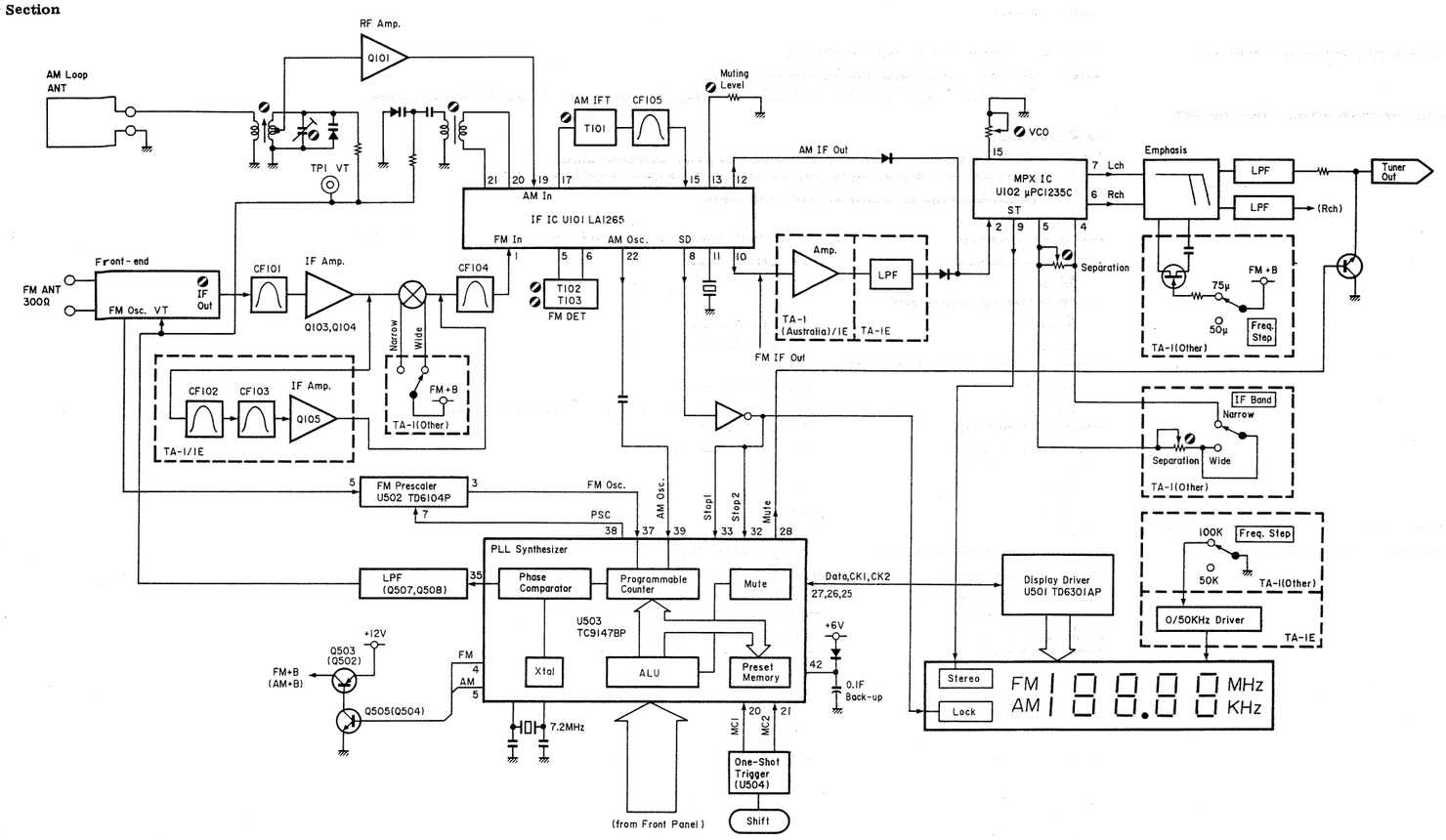


Fig. 9.1

9.2. Amplifier Section

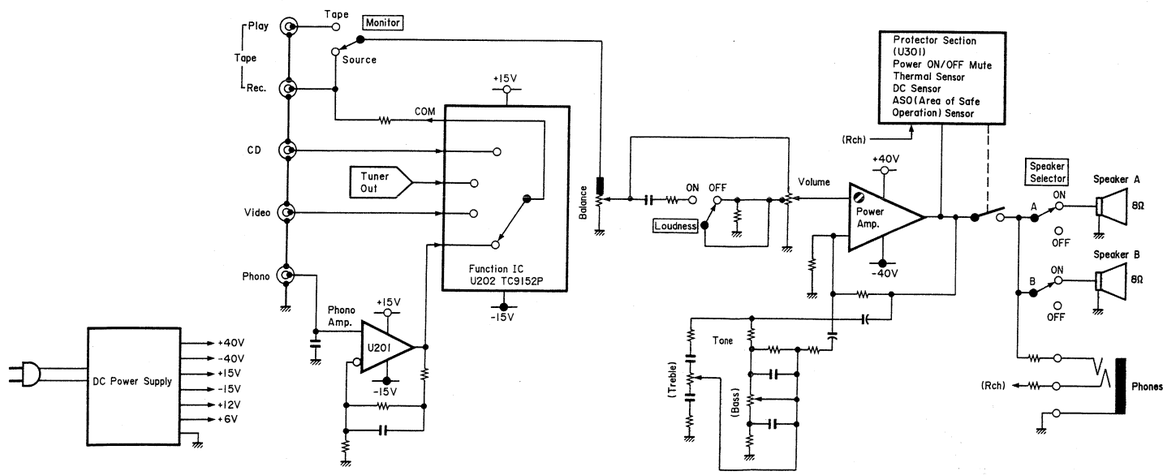


Fig. 9.2

10. SPECIFICATIONS

Power Amplifier Section

Note: Unless noted otherwise, specifications are in accordance with IHF-A-202 measured from any high-level input (CD/VIDEO/TAPE) to the speaker output.

Continuous Average Output Power	**35watts per channel into 8 ohms, both channels driven, 20—20,000 Hz, at no greater than 0.1% THD**
Dynamic Output Power	52 watts per channel into 8 ohms 65 watts per channel into 4 ohms
Dynamic Head Room (8 ohms)	1.7 dB
Power Bandwidth	10—40,000 Hz
Frequency Response	20—20,000 Hz; ±1 dB 10—50,000; +0, —3 dB
Signal to Noise Ratio (A-WTD, Input Shorted)	Better than 98 dB re Rated Power Better than 84 dB (IHF-A-202)
Total Harmonic Distortion (8 ohms, Rated Power, 20 Hz—20 kHz)	Less than 0.1%
Headphone Rated Output (40 ohms)	82 mW
Output Current Capability	10 A peak per channel

Preamplifier Section

Note: Unless noted otherwise, specifications are in accordance with IHF-A-202. Except for Sensitivity, S/N, Tone Control and Loudness characteristics (which are measured to the speaker outputs), measurements are made from the specified input to Rec. Out.

Sensitivity (for rated output)	
Phono MM	2.5 mV
CD/Tape	150 mV
Sensitivity (for 1-watt output, IHF-A-202)	
Phono MM	0.42 mV
CD/Tape	25 mV
Input Impedance	
Phono MM	47 kohms
CD/Tape	20 kohms
Maximum Input Level (1 kHz)	
Phono MM	150 mV
Record Output Level/ Impedance	150 mV/2.2 kohms
Total Harmonic Distortion (1 kHz, to Rec. Out, at 1 V)	
Phono MM	Less than 0.01%
RIAA Deviation	
Phono MM	30—20,000 Hz ±1 dB
Signal to Noise Ratio (to speaker output, IHF-A-202)	
Phono MM	Better than 78 dB
Tone Controls	
Bass	20 Hz, ±10 dB
Treble	20 kHz, ±10 dB
Loudness (Volume: —30 dB)	20 Hz, +10 dB; 20 kHz, +6 dB

Tuner Section

(1) TA-1 (Other) (See Note) & TA-1A

Note: Selector switch settings for Other Model
Frequency Step FM/AM: 100 kHz/10 kHz, De-emphasis: 75 μs, IF Band: Wide

[FM Section]

Note: All RF levels in microvolts given re 300-ohm antenna input.
Modulation: Mono 100%, Stereo Pilot 9%, Stereo Audio Signal 91%.
All measurements made at Rec. Out Jack.

Frequency Range	87.5—108.0 MHz in 100 kHz steps
IHF Usable Sensitivity (Mono)	12.0 dBf/2.2 μV
50-dB Quieting Sensitivity	
Mono	15.7 dBf/3.3 μV
Stereo	38.5 dBf/46.1 μV
Signal to Noise Ratio at 65 dBf	
Mono	Better than 79 dB
Stereo	Better than 74 dB (TA-1A)/72 dB (TA-1 (Other))
Muting Threshold	30 dBf/17.3 μV
Frequency Response	30—15,000 Hz ±1.5 dB
Total Harmonic Distortion (1 kHz)	
Mono	Less than 0.15%
Stereo	Less than 0.20%
Capture Ratio	2.0 dB
Alternate Channel Selectivity	55 dB (±400 kHz)
Stereo Separation at 1 kHz	Better than 45 dB
Spurious Response Rejection	Better than 80 dB
Image Rejection	Better than 47 dB
IF Rejection	Better than 80 dB
AM Suppression	Better than 60 dB

[AM Section]

Note: Modulation — 400 Hz, 30%

Frequency Range	520—1,710 kHz in 10 kHz steps
Sensitivity	53 dBμ/m
Signal to Noise Ratio at 90 dBμ/m	Better than 52 dB
Total Harmonic Distortion at 90 dBμ/m	Less than 0.5%
Selectivity	Better than 20 dB (±10 kHz)

(2) TA-1 (Other) (See Note) & TA-1E

Note: Selector switch settings for Other Model
Frequency Step FM/AM: 50 kHz/9 kHz, De-emphasis: 50 μs, IF Band: Narrow

[FM Section]

Note: All RF levels in microvolts given re 300-ohm antenna input.
Modulation: Mono 60%, Stereo Pilot 9%, Stereo Audio Signal 51%.
All measurements made at Rec. Out Jack.

Frequency Range	87.50—108.00 MHz in 50 kHz steps
IHF Usable Sensitivity (Mono)	12.0 dBf/2.2 μV
50-dB Quieting Sensitivity	
Mono	15.7 dBf/3.3 μV (TA-1E), 24.0 dBf/8.7 μV (TA-1 (Other)),
Stereo	38.5 dBf/46.1 μV (TA-1E), 44.0 dBf/86.8 μV (TA-1 (Other)),
Signal to Noise Ratio at 65 dBf	
Mono	Better than 71 dB (TA-1E)/72 dB (TA-1 (Other))
Stereo	Better than 66 dB (TA-1E)/67 dB (TA-1 (Other))
Muting Threshold	30 dBf/17.3 μV
Frequency Response	30—15,000 Hz ±1.5 dB
Total Harmonic Distortion (1 kHz)	
Mono	Less than 0.25% (TA-1E)/0.20% (TA-1 (Other))
Stereo	Less than 0.25%
Capture Ratio	2.0 dB
Alternate Channel Selectivity	70 dB (±300 kHz)
Stereo Separation at 1 kHz	Better than 38 dB (TA-1E)/43 dB (TA-1 (Other))
Spurious Response Rejection	Better than 90 dB (TA-1E)/80 dB (TA-1 (Other))
Image Rejection	Better than 75 dB (TA-1E)/47 dB (TA-1 (Other))
IF Rejection	Better than 80 dB
AM Suppression	Better than 60 dB

[AM Section]

Note: Modulation — 400 Hz, 30%

Frequency Range	522—1,611 kHz in 9 kHz steps
Sensitivity	53 dBμ/m
Signal to Noise Ratio at 90 dBμ/m	Better than 52 dB
Total Harmonic Distortion at 90 dBμ/m	Less than 0.5%
Selectivity	Better than 20 dB (±9 kHz)

General

Power Source	120, 220, 240 or 110/120/220/240 V AC, 50/60 Hz (According to country of sale)
Power Consumption	220 watts max.
Convenience Outlets	Switched: 2 (For TA-1 (Other) & TA-1A)
Dimensions	430 (W) x 100 (H) x 265 (D) mm 16-15/16 (W) x 3-15/16 (H) x 10-7/16 (D) inches
Approximate Weight	6.0 kg, 13 lbs. 4 oz.

- Specifications and design are subject to change for further improvement without notice.